SEQUENCE LISTING

<110> Cohen, Dalia et al.

<120> Identification of Genes Involved in
Alzheimer's Disease Using Drosophila Melanogaster

<130> 4-31612 A

<150> 60/236,893
<151> 2000-09-29

<150> 60/298,309
<151> 2001-06-14

<160> 53

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 123
<212> DNA
<213> Homo Sapien

<400> 1
gacgcagaat tccgacatga ctcaggatat gaagttcatc atcaaaaatt ggtgttcttt   60
gcagaagatg tgggttcaaa caaaggtgca atcattggac tcatggtggg cggtgttgtc   120
tag   123

<210> 2
<211> 129
<212> DNA
<213> Homo Sapien

<400> 2
gacgcagaat tccgacatga ctcaggatat gaagttcatc atcaaaaatt ggtgttcttt   60
gcagaagatg tgggttcaaa caaaggtgca atcattggac tcatggtggg cggtgttgtc   120
atagcgtag   129

<210> 3
<211> 300
<212> DNA
<213> Homo Sapien

<400> 3
gacgcagaat tccgacatga ctcaggatat gaagttcatc atcaaaaatt ggtgttcttt   60
gcagaagatg tgggttcaaa caaaggtgca atcattggac tcatggtggg cggtgttgtc   120
atagcgacag tgatcgtcat caccttggtg atgctgaaga agaaacagta cacatccatt   180
catcatggtg tggtggaggt tgacgccgct gtcaccccag aggagcgcca cctgtccaag   240
atgcagcaga acggctacga aaatccaacc tacaagttct ttgagcagat gcagaactag   300

<210> 4

- 1 -

```
<211> 300
<212> DNA
<213> Homo Sapien

<400> 4
gacgcagaat tccgacatga ctcaggatat gaagttcatc atcaaaaatt ggtgttcttt        60
gcagaagatg tgggttcaaa caaaggtgca atcattggac tcatggtggg cggtgttgtc       120
atagcgacag tgatcatcat caccttggtg atgctgaaga agaaacagta cacatccatt       180
catcatggtg tggtggaggt tgacgccgct gtcaccccag aggagcgcca cctgtccaag       240
atgcagcaga acggctacga aaatccaacc tacaagttct ttgagcagat gcagaactag       300

<210> 5
<211> 72
<212> DNA
<213> Homo Sapien

<400> 5
atggcgcagt tcctgagact ttgcatctgg ctgctagcgc ttgggtcctg cctcctggct        60
acagtgcagg ca                                                            72

<210> 6
<211> 1537
<212> DNA
<213> Homo Sapien

<400> 6
ggtgcgccga gcaggagcag ggaacaaagg agcggagagg ggaggggaga gagttgggcg        60
agggagagcc cccggccggc tgccagaaga tcccggcggg aggaagccca agtgtcactt       120
gaattccacc caaggagcgg gcgcctggga tcagagcgtc ctgtttagca ataacggctg       180
gagcacgtcc tacaagttac gggagagtcg gctgtgaagg agacgttcgc ttatcccctg       240
tgtccccgct cctggcccct ccagaccccc gccttgcctc gcgctgggag gggagatcca       300
gaatgaaagg caagaaaggt attgttgcag catctggcag tgagactgag gatgaggaca       360
gcatggacat tcccttggac ctttcttcat ccgctggctc aggcaagaga aggagaaggg       420
gcaacctacc caaggagtct gtgcagattc ttcgggattg gctgtatgag caccgttaca       480
atgcctatcc ttcagagcaa gaaaaagcgt tgctgtccca gcaaacacac ctgtctacgc       540
tacaggtctg taactggttc atcaacgccc gccgcaggct cctccctgac atgctgagaa       600
aggatggcaa agatccaaat cagttcacaa tttcccgccg tggggccaag atttctgaaa       660
cgagctctgt ggagtccgtg atgggcatca aaaacttcat gccagctcta gaggagaccc       720
catttcattc ctgtacagct gggccaaacc caaccctagg gaggccactg tctcctaagc       780
cgtcatcccc gggatcagtt ttggctcgtc catcagtgat ctgccatacc actgtgactg       840
cattgaaaga tgtccctttc tctctctgcc agtcggtcgg tgtgggacaa aacacagata       900
tacagcagat agcggccaaa aacttcacag acacctctct catgtaccca gaggacactt       960
gtaaatctgg accaagtacg aatacacaga gtggtctttt caacactcct ccccctactc      1020
caccggacct caaccaggac ttcagtggat ttcagcttct agtggatgtt gcactcaaac      1080
gggctgcaga gatggagctt caggcaaaac ttacagctta acccattttc aagcaaaaca      1140
gttctcagaa atgtcatgat tgccggggtg aaggcaagag atgaattgca ttattttata      1200
tattttttat taatatttgc acatgggatt gctaaaacag cttcctgtta ctgagatgtc      1260
ttcaatggaa tacagtcatt ccaagaacta taaacttaaa gctactgtag aaacaaaggg      1320
ttttcttttt taaatgtttc ttggtagatt attcataatg tgagatggtt cccaatatca      1380
tgtgattttt ttttcctcc ccttcccttt ttttgttatt ttttcagact gtgcaatact      1440
tagagaacct atagcatctt ctcattccca tgtggaacag gatgcccaca tactgtctaa      1500
ttaataaatt ttccattttt tttcaaacaa gtatgaa                               1537

<210> 7
<211> 332
```

- 2 -

<212> PRT
<213> Homo Sapien

<400> 7
Ile Pro Pro Lys Glu Arg Ala Pro Gly Ile Arg Ala Ser Cys Leu Ala
 1   5   10   15
Ile Thr Ala Gly Ala Arg Pro Thr Ser Tyr Gly Arg Val Gly Cys Glu
            20   25   30
Gly Asp Val Arg Leu Ser Pro Val Ser Pro Leu Leu Ala Pro Pro Asp
            35   40   45
Pro Arg Leu Ala Ser Arg Trp Glu Gly Arg Ser Arg Met Lys Gly Lys
    50   55   60
Lys Gly Ile Val Ala Ala Ser Gly Ser Glu Thr Glu Asp Glu Asp Ser
65   70   75   80
Met Asp Ile Pro Leu Asp Leu Ser Ser Ser Ala Gly Ser Gly Lys Arg
                85   90   95
Arg Arg Arg Gly Asn Leu Pro Lys Glu Ser Val Gln Ile Leu Arg Asp
            100   105   110
Trp Leu Tyr Glu His Arg Tyr Asn Ala Tyr Pro Ser Glu Gln Glu Lys
            115   120   125
Ala Leu Leu Ser Gln Gln Thr His Leu Ser Thr Leu Gln Val Cys Asn
        130   135   140
Trp Phe Ile Asn Ala Arg Arg Arg Leu Leu Pro Asp Met Leu Arg Lys
145   150   155   160
Asp Gly Lys Asp Pro Asn Gln Phe Thr Ile Ser Arg Arg Gly Ala Lys
                165   170   175
Ile Ser Glu Thr Ser Ser Val Glu Ser Val Met Gly Ile Lys Asn Phe
            180   185   190
Met Pro Ala Leu Glu Glu Thr Pro Phe His Ser Cys Thr Ala Gly Pro
            195   200   205
Asn Pro Thr Leu Gly Arg Pro Leu Ser Pro Lys Pro Ser Ser Pro Gly
    210   215   220
Ser Val Leu Ala Arg Pro Ser Val Ile Cys His Thr Thr Val Thr Ala
225   230   235   240
Leu Lys Asp Val Pro Phe Ser Leu Cys Gln Ser Val Gly Val Gly Gln
                245   250   255
Asn Thr Asp Ile Gln Gln Ile Ala Ala Lys Asn Phe Thr Asp Thr Ser
            260   265   270
Leu Met Tyr Pro Glu Asp Thr Cys Lys Ser Gly Pro Ser Thr Asn Thr
            275   280   285
Gln Ser Gly Leu Phe Asn Thr Pro Pro Thr Pro Pro Asp Leu Asn
    290   295   300
Gln Asp Phe Ser Gly Phe Gln Leu Leu Val Asp Val Ala Leu Lys Arg
305   310   315   320
Ala Ala Glu Met Glu Leu Gln Ala Lys Leu Thr Ala
                325   330

<210> 8
<211> 1053
<212> DNA
<213> Homo Sapien

<400> 8
gtggtgcgaa tcctggagcg gcaaggccct cgggcagctc ctggggtgc agacgatctc   60
agtgctgtgc gcaaccacac ttaccagatg ttgacactgc tggcagagga ccgtgcagtt   120

- 3 -

```
ccctcggccc ccacaggccc tgggcccctg ctggagtttg ctctgcacga ggatctgctg      180
acccgtgtgt tgacatggca gctgcaatgg gatgagcttg gggatggggt cgaggaacgg      240
cgggctgagc aactgaaact atttgaaatg ctagtgagcg aagctcgcca gccactgttg      300
cggcatggtc cagttcgtga ggctctgctc accctgctgg atgcctgtgg ccgccctgtg      360
cccagtagcc cagcactgga tgaaggcttg gtgctacttc tcagccagct gtgtgtttgt      420
gtggcccagg agccttcatt gctcgagttc ttcctgcagc cacctcctga gcctggagcc      480
gctccccgtc ttcttctctt ttctcgcctt gtcccttttg tgcatcgaga gggcaccctg      540
ggccagcagg cccgtgatgc cctacttctt ctcatggctt gtcagctgg gagccccact      600
gtgggccgct acatcgcgga tcactcttac ttctgcccgg tgctggccac agggctcagt      660
gccctgtact catcactgcc tcgaaagatt gaggttccag gggatgattg cactgtctg      720
cgacgggaag actggctggg agtgccagcc cttgcactct tcatgagttc cctggagttc      780
tgcaatgcag taattcaggt ggctcacccc ctggtgcaga agcagttggt tgattatatc      840
cataatgggt tcctggtgcc tgtcatgggt cctgccttgc acaagacctc tgtggaggag      900
atgatcgcca gtaccgccta cctggaactt ttcctacgga gtatctcaga gcctgctttg      960
ctccgtacct tcctgcgatt cctgttgttg caccggcatg acacccacac catcctcgac     1020
accctcgttg ctcgtattgg cagtaactcc cgg                                  1053
```

<210> 9
<211> 351
<212> PRT
<213> Homo Sapien

<400> 9
```
Val Val Arg Ile Leu Glu Arg Gln Gly Pro Arg Ala Ala Pro Gly Gly
1               5                   10                  15
Ala Asp Asp Leu Ser Ala Val Arg Asn His Thr Tyr Gln Met Leu Thr
            20                  25                  30
Leu Leu Ala Glu Asp Arg Ala Val Pro Ser Ala Pro Thr Gly Pro Gly
        35                  40                  45
Pro Leu Leu Glu Phe Ala Leu His Glu Asp Leu Leu Thr Arg Val Leu
    50                  55                  60
Thr Trp Gln Leu Gln Trp Asp Glu Leu Gly Asp Gly Val Glu Glu Arg
65                  70                  75                  80
Arg Ala Glu Gln Leu Lys Leu Phe Glu Met Leu Val Ser Glu Ala Arg
                85                  90                  95
Gln Pro Leu Leu Arg His Gly Pro Val Arg Glu Ala Leu Leu Thr Leu
            100                 105                 110
Leu Asp Ala Cys Gly Arg Pro Val Pro Ser Ser Pro Ala Leu Asp Glu
        115                 120                 125
Gly Leu Val Leu Leu Leu Ser Gln Leu Cys Val Cys Val Ala Gln Glu
    130                 135                 140
Pro Ser Leu Leu Glu Phe Phe Leu Gln Pro Pro Pro Glu Pro Gly Ala
145                 150                 155                 160
Ala Pro Arg Leu Leu Leu Phe Ser Arg Leu Val Pro Phe Val His Arg
                165                 170                 175
Glu Gly Thr Leu Gly Gln Gln Ala Arg Asp Ala Leu Leu Leu Met
            180                 185                 190
Ala Leu Ser Ala Gly Ser Pro Thr Val Gly Arg Tyr Ile Ala Asp His
        195                 200                 205
Ser Tyr Phe Cys Pro Val Leu Ala Thr Gly Leu Ser Ala Leu Tyr Ser
    210                 215                 220
Ser Leu Pro Arg Lys Ile Glu Val Pro Gly Asp Asp Trp His Cys Leu
225                 230                 235                 240
Arg Arg Glu Asp Trp Leu Gly Val Pro Ala Leu Ala Leu Phe Met Ser
                245                 250                 255
```

- 4 -

```
Ser Leu Glu Phe Cys Asn Ala Val Ile Gln Val Ala His Pro Leu Val
            260                 265             270
Gln Lys Gln Leu Val Asp Tyr Ile His Asn Gly Phe Leu Val Pro Val
            275                 280             285
Met Gly Pro Ala Leu His Lys Thr Ser Val Glu Glu Met Ile Ala Ser
        290                 295             300
Thr Ala Tyr Leu Glu Leu Phe Leu Arg Ser Ile Ser Glu Pro Ala Leu
305                 310             315                 320
Leu Arg Thr Phe Leu Arg Phe Leu Leu Leu His Arg His Asp Thr His
            325                 330             335
Thr Ile Leu Asp Thr Leu Val Ala Arg Ile Gly Ser Asn Ser Arg
            340                 345             350
```

<210> 10
<211> 1425
<212> DNA
<213> Homo Sapien

<400> 10

```
gggaaagaaa atgaggcccc aggacacctg ggttcacacc caggtcccca gcgatgtctc       60
caccaccgct gctgcaaccc ctgctgctgc tgctgcctct gctgaatgtg gagccttccg      120
gggccacact gatccgcatc cctcttcatc gagtccaacc tggacgcagg atcctgaacc      180
tactgagggg atggagagaa ccagcagagc tccccaagtt ggggggcccca tccctggg      240
acaagcccat cttcgtacct ctctcgaact acagggatgt gcagtatttt ggggaaattg      300
ggctgggaac gcctccacaa aacttcactg ttgcctttga cactggctcc tccaatctct      360
gggtcccgtc aggagatgc cacttcttca gtgtgccctg ctggttacac caccgatttg      420
atcccaaagc tctagctcc ttccaggcca atgggaccaa gtttgccatt caatatggaa      480
ctgggcgggt agatggaatc ctgagcgagg acaagctgac tattggtgga atcaagggtg      540
catcagtgat tttcggggag gctctctggg agcccagcct ggtcttcgct tttgcccatt      600
ttgatgggat attgggcctc ggttttccca ttctgtctgt ggaaggagtt cggccccga      660
tggatgtact ggtggagcag gggctattgg ataagcctgt cttctccttt tacctcaaca      720
gggaccctga agagcctgat ggaggagagc tggtcctggg gggctcggac ccggcacact      780
acatcccacc cctcaccttc gtgccagtca cggtccccgc ctactggcag atccacatgg      840
agcgtgtgaa ggtgggccca gggctgactc tctgtgccaa gggctgtgct gccatcctgg      900
atacgggcac gtccctcatc acaggaccca ctgaggagat ccgggccctg catgcagcca      960
ttgggggaat ccccttgctg gctggggagt acatcatcct gtgctcggaa atcccaaagc     1020
tccccgcagt ctccttcctt cttggggggg tctggtttaa cctcacggcc catgattacg     1080
tcatccagac tactcgaaat ggcgtccgcc tctgcttgtc cggtttccag gccctggatg     1140
tccctccgcc tgcagggccc ttctggatcc tcggtgacgt cttcttgggg acgtatgtgg     1200
ccgtcttcga ccgcggggac atgaagagca gcgccgggt gggcctggcg cgcgctcgca     1260
ctcgcggagc ggacctcgga tggggagaga ctgcgcaggc gcagttcccc gggtgacgcc     1320
caagtgaagc gcatgcgcag cgggtggtcg cggaggtcct gctacccagt aaaaatccac     1380
tatttccatt gagcgaaaaa aaaaaaaaaa aaaaaaaaaa atcaa                      1425
```

<210> 11
<211> 433
<212> PRT
<213> Homo Sapien

<400> 11

```
Gly Pro Arg Thr Pro Gly Phe Thr Pro Arg Ser Pro Ala Met Ser Pro
 1               5                 10              15
Pro Pro Leu Leu Gln Pro Leu Leu Leu Leu Pro Leu Leu Asn Val
            20                  25              30
Glu Pro Ser Gly Ala Thr Leu Ile Arg Ile Pro Leu His Arg Val Gln
```

- 5 -

```
                35                    40                    45
Pro Gly Arg Arg Ile Leu Asn Leu Leu Arg Gly Trp Arg Glu Pro Ala
    50                    55                    60
Glu Leu Pro Lys Leu Gly Ala Pro Ser Pro Gly Asp Lys Pro Ile Phe
65                    70                    75                    80
Val Pro Leu Ser Asn Tyr Arg Asp Val Gln Tyr Phe Gly Glu Ile Gly
                85                    90                    95
Leu Gly Thr Pro Pro Gln Asn Phe Thr Val Ala Phe Asp Thr Gly Ser
                100                   105                   110
Ser Asn Leu Trp Val Pro Ser Arg Arg Cys His Phe Phe Ser Val Pro
                115                   120                   125
Cys Trp Leu His His Arg Phe Asp Pro Lys Ala Ser Ser Ser Phe Gln
    130                   135                   140
Ala Asn Gly Thr Lys Phe Ala Ile Gln Tyr Gly Thr Gly Arg Val Asp
145                   150                   155                   160
Gly Ile Leu Ser Glu Asp Lys Leu Thr Ile Gly Gly Ile Lys Gly Ala
                165                   170                   175
Ser Val Ile Phe Gly Glu Ala Leu Trp Glu Pro Ser Leu Val Phe Ala
                180                   185                   190
Phe Ala His Phe Asp Gly Ile Leu Gly Leu Gly Phe Pro Ile Leu Ser
                195                   200                   205
Val Glu Gly Val Arg Pro Pro Met Asp Val Leu Val Glu Gln Gly Leu
    210                   215                   220
Leu Asp Lys Pro Val Phe Ser Phe Tyr Leu Asn Arg Asp Pro Glu Glu
225                   230                   235                   240
Pro Asp Gly Gly Glu Leu Val Leu Gly Gly Ser Asp Pro Ala His Tyr
                245                   250                   255
Ile Pro Pro Leu Thr Phe Val Pro Val Thr Val Pro Ala Tyr Trp Gln
                260                   265                   270
Ile His Met Glu Arg Val Lys Val Gly Pro Gly Leu Thr Leu Cys Ala
                275                   280                   285
Lys Gly Cys Ala Ala Ile Leu Asp Thr Gly Thr Ser Leu Ile Thr Gly
    290                   295                   300
Pro Thr Glu Glu Ile Arg Ala Leu His Ala Ala Ile Gly Gly Ile Pro
305                   310                   315                   320
Leu Leu Ala Gly Glu Tyr Ile Ile Leu Cys Ser Glu Ile Pro Lys Leu
                325                   330                   335
Pro Ala Val Ser Phe Leu Leu Gly Gly Val Trp Phe Asn Leu Thr Ala
                340                   345                   350
His Asp Tyr Val Ile Gln Thr Thr Arg Asn Gly Val Arg Leu Cys Leu
                355                   360                   365
Ser Gly Phe Gln Ala Leu Asp Val Pro Pro Pro Ala Gly Pro Phe Trp
    370                   375                   380
Ile Leu Gly Asp Val Phe Leu Gly Thr Tyr Val Ala Val Phe Asp Arg
385                   390                   395                   400
Gly Asp Met Lys Ser Ser Ala Arg Val Gly Leu Ala Arg Ala Arg Thr
                405                   410                   415
Arg Gly Ala Asp Leu Gly Trp Gly Glu Thr Ala Gln Ala Gln Phe Pro
                420                   425                   430
Gly
```

<210> 12
<211> 1242
<212> DNA

- 6 -

<400> 12

```
cggtgtgtgc ggaacatggc ggagcgcggc aggaagcggc cgtgcggccc gggtgaacac      60
ggccaaagga ttgagtggcg aaaatggaag caacagaaga aagaggagaa aaaaaaatgg     120
aaggatctca agctgatgaa aaaactggag cggcagcggg cacaggagga acaggcaaag     180
cgcctggaag aggaggaggc agcggcagag aaggaggacc gcgggcggcc ctacacactg     240
agcgtagccc tgccgggctc catcctggac aatgctcagt cgccggagct tcgcacctac     300
ttggccggtc agattgccag agcctgtgcc atcttctgtg tggatgagat cgtggtgttt     360
gatgaggagg gccaggatgc caagactgtg gagggggaat tcacaggagt tgggaagaag     420
gggcaggcgt cgtacagct ggcccggatc ctgcagtacc tggagtgtcc acagtacctg     480
aggaaggcgt tcttccccaa gcaccaggat ctacagtttg cagggctcct gaacccctg      540
gacagccccc accacatgcg tcaggatgag gaatccgagt ccgagagggg catcgtggtg     600
gatcggccca cccggccagg ccacggctcc tttgtcaact gtggcatgaa aaaggaggtg     660
aagattgaca gaacctggga gcccgggctt cgggtgactg tgcgactgaa ccagcagcag     720
cacccagact gcaagaccta ccatggcaaa gtggtatcat cgcaggaccc tcgcaccaaa     780
gctggtctct actggggcta caccgtccga ctggcttcct gcctcagtgc tgtgtttgct     840
gaggcccct tccaagatgg gtatgacctg accatcggga cgtcagagcg cggctcagat     900
gtggcctctg cccagcttcc caacttcagg catgctcttg tggtgttcgg gggcctccag     960
ggtctggaag ctggagcgga tgctgacccc aacctggagg tggctgaacc cagtgtcctc    1020
tttgacctgt acgtcaatac ctgtcctggc cagggtagcc gtaccatccg cacggaggaa    1080
gccatcctca tctccctggc cgccctgcag cctggcctca cccaggcggg tgcccggcac    1140
acctgaaagt tctaaggggc cgaggacatc agtgaagcag cagtgaaacc aggggctctg    1200
caggtcactt gggacggacg ccaccagact tgtctccaaa aa                       1242
```

<210> 13
<211> 381
<212> PRT
<213> Homo Sapien

<400> 13

```
Arg Cys Val Arg Asn Met Ala Glu Arg Gly Arg Lys Arg Pro Cys Gly
1               5                   10                  15
Pro Gly Glu His Gly Gln Arg Ile Glu Trp Arg Lys Trp Lys Gln Gln
            20                  25                  30
Lys Lys Glu Glu Lys Lys Lys Trp Lys Asp Leu Lys Leu Met Lys Lys
        35                  40                  45
Leu Glu Arg Gln Arg Ala Gln Glu Glu Gln Ala Lys Arg Leu Glu Glu
    50                  55                  60
Glu Glu Ala Ala Ala Glu Lys Glu Asp Arg Gly Arg Pro Tyr Thr Leu
65                  70                  75                  80
Ser Val Ala Leu Pro Gly Ser Ile Leu Asp Asn Ala Gln Ser Pro Glu
                85                  90                  95
Leu Arg Thr Tyr Leu Ala Gly Gln Ile Ala Arg Ala Cys Ala Ile Phe
            100                 105                 110
Cys Val Asp Glu Ile Val Val Phe Asp Glu Glu Gly Gln Asp Ala Lys
        115                 120                 125
Thr Val Glu Gly Glu Phe Thr Gly Val Gly Lys Lys Gly Gln Ala Cys
        130                 135                 140
Val Gln Leu Ala Arg Ile Leu Gln Tyr Leu Glu Cys Pro Gln Tyr Leu
145                 150                 155                 160
Arg Lys Ala Phe Phe Pro Lys His Gln Asp Leu Gln Phe Ala Gly Leu
                165                 170                 175
Leu Asn Pro Leu Asp Ser Pro His His Met Arg Gln Asp Glu Glu Ser
            180                 185                 190
```

```
Glu Phe Arg Glu Gly Ile Val Val Asp Arg Pro Thr Arg Pro Gly His
    195                 200                 205
Gly Ser Phe Val Asn Cys Gly Met Lys Lys Glu Val Lys Ile Asp Lys
    210                 215                 220
Asn Leu Glu Pro Gly Leu Arg Val Thr Val Arg Leu Asn Gln Gln Gln
225                 230                 235                 240
His Pro Asp Cys Lys Thr Tyr His Gly Lys Val Val Ser Ser Gln Asp
                245                 250                 255
Pro Arg Thr Lys Ala Gly Leu Tyr Trp Gly Tyr Thr Val Arg Leu Ala
            260                 265                 270
Ser Cys Leu Ser Ala Val Phe Ala Glu Ala Pro Phe Gln Asp Gly Tyr
            275                 280                 285
Asp Leu Thr Ile Gly Thr Ser Glu Arg Gly Ser Asp Val Ala Ser Ala
        290                 295                 300
Gln Leu Pro Asn Phe Arg His Ala Leu Val Val Phe Gly Gly Leu Gln
305                 310                 315                 320
Gly Leu Glu Ala Gly Ala Asp Ala Asp Pro Asn Leu Glu Val Ala Glu
            325                 330                 335
Pro Ser Val Leu Phe Asp Leu Tyr Val Asn Thr Cys Pro Gly Gln Gly
            340                 345                 350
Ser Arg Thr Ile Arg Thr Glu Glu Ala Ile Leu Ile Ser Leu Ala Ala
            355                 360                 365
Leu Gln Pro Gly Leu Thr Gln Ala Gly Ala Arg His Thr
    370                 375                 380


<210> 14
<211> 1779
<212> DNA
<213> Homo Sapien

<400> 14
cccggccacg gcttccgctg cgggccaccc caggattact cgcgtctggc tccaggcgcc        60
gagaaggcgc gctgggcgcc cgtggccgcc gcgccagctc ctcctcctcc cgctgctcct       120
gctccggggg cgagcgcgca gccccgagcc cgccccgcgc ctcccggagc cctccccccc       180
gctgctccca tgcgcgcggg ctcgtccccg gccggcagca ccaagccttt tgtgcacgcc       240
gtgcccccct ctgacccccт gcgccaggcc aaccgcctgc caatcaaggt gctgaagatg       300
ctgacggcac gaactggcca cattttgcac cccgagtacc tgcagcccct gccttccacg       360
ccggtcagcc ccatcgagct cgatgccaag aagagcccgc tggcgctgtt ggcgcaaaca       420
tgttcgcaga tcgggaagcc cgacccctcg ccctcctcca aactctcctc gaagtcggga       480
ttccgggtac cgagcgccac ctgccagcca ttcacgccca ggacaggcag cccgagctcc       540
agcgcctcgg cctgctcgcc gggaggtatg ctgtcctcgg ccggggggtgc cccggagggc       600
aaggacgaca agaaagacac cgacgtgggc ggcggtggca agggcaccgg gggcgcctcg       660
gccgaagggg gacccacggg gctggcacac ggccggatta gctgcggcgg cgggattaat       720
gtggatgtga accagcatcc ggatggggggc ccgggaggca aggctctggg ctcggactgc       780
ggcggttcat cgggctccag ctccggctcc ggccccagcg cgcccacctc ctcctcagtg       840
ttgggctctg ggctggtggc tcccgtgtca ccctacaagc cgggccagac agtgttccct       900
ctgcctcccg cgggtatgac ctacccaggc agcctggccg gggcctacgc cggctacccg       960
ccccagttcc tgccacacgg cgtggcactt gaccccacca agccgggcag cctggtgggg      1020
gcgcagctgg cggcggccgc ggccgggtct ctgggctgca gtaagccggc cggctccagc      1080
cctttggccg gagcgtctcc gccgtccgtg atgacagcca gtttgtgccg ggacccttac      1140
tgcctcagct accactgcgc tagccacctg caggggcgg cggccgccag cgcttcttgc      1200
gcacatgatc cggctgctgc ggctgcggcg ctgaagtccg gatacccgct ggtgtacccc      1260
acgcaccgc tgcacggtgt gcactcctcg ctaacggccg ccgcggctgc tggcgccaca      1320
ccgccctccc tggccggcca ccccctctac ccctacggct ttatgctccc taacgaccca      1380
ctccccccaca tctgcaactg ggtgtcggcc aacgggccgt gcgacaagcg cttcgccacg      1440
```

```
tccgaagagc tgctgagcca cttgcggacc catacggcat ttccggggac agacaaactg    1500
ctgtcgggct accccagctc gtcgtctatg gccagcgctg ccgcggccgc catggcttgc    1560
cacatgcaca tccccacctc gggcgcaccg ggcagccctg gggacgctgg cgctgcgcag    1620
cccccaccac gcgctgggac tcagcagccg ctaccacccc tactccaaga gcccgcttcc    1680
cacgcctggc gccccgtgc cggtgcccgc cgccaccgga ccgtactact ccccctacgc    1740
cctctacgga cagagactga ccaccgcctc ggcgctggg                          1779
```

<210> 15
<211> 593
<212> PRT
<213> Homo Sapien

<400> 15

```
Pro Gly His Gly Phe Arg Cys Gly Pro Pro Gln Asp Tyr Ser Arg Leu
 1               5                  10                  15
Ala Pro Gly Ala Glu Lys Ala Arg Trp Ala Pro Val Ala Ala Ala Pro
            20                  25                  30
Ala Pro Pro Pro Ala Ala Pro Ala Pro Gly Ala Ser Ala Gln Pro
        35                  40                  45
Arg Ala Arg Pro Ala Pro Pro Gly Ala Leu Pro Pro Ala Ala Pro Met
    50                  55                  60
Arg Ala Gly Ser Ser Pro Ala Gly Ser Thr Lys Pro Phe Val His Ala
65                  70                  75                  80
Val Pro Pro Ser Asp Pro Leu Arg Gln Ala Asn Arg Leu Pro Ile Lys
                85                  90                  95
Val Leu Lys Met Leu Thr Ala Arg Thr Gly His Ile Leu His Pro Glu
            100                 105                 110
Tyr Leu Gln Pro Leu Pro Ser Thr Pro Val Ser Pro Ile Glu Leu Asp
        115                 120                 125
Ala Lys Lys Ser Pro Leu Ala Leu Leu Ala Gln Thr Cys Ser Gln Ile
    130                 135                 140
Gly Lys Pro Asp Pro Ser Pro Ser Ser Lys Leu Ser Ser Lys Ser Gly
145                 150                 155                 160
Phe Arg Val Pro Ser Ala Thr Cys Gln Pro Phe Thr Pro Arg Thr Gly
                165                 170                 175
Ser Pro Ser Ser Ser Ala Ser Ala Cys Ser Pro Gly Gly Met Leu Ser
            180                 185                 190
Ser Ala Gly Gly Ala Pro Glu Gly Lys Asp Asp Lys Lys Asp Thr Asp
            195                 200                 205
Val Gly Gly Gly Gly Lys Gly Thr Gly Gly Ala Ser Ala Glu Gly Gly
    210                 215                 220
Pro Thr Gly Leu Ala His Gly Arg Ile Ser Cys Gly Gly Gly Ile Asn
225                 230                 235                 240
Val Asp Val Asn Gln His Pro Asp Gly Gly Pro Gly Gly Lys Ala Leu
                245                 250                 255
Gly Ser Asp Cys Gly Gly Ser Ser Gly Ser Ser Ser Gly Ser Gly Pro
            260                 265                 270
Ser Ala Pro Thr Ser Ser Ser Val Leu Gly Ser Gly Leu Val Ala Pro
        275                 280                 285
Val Ser Pro Tyr Lys Pro Gly Gln Thr Val Phe Pro Leu Pro Pro Ala
    290                 295                 300
Gly Met Thr Tyr Pro Gly Ser Leu Ala Gly Ala Tyr Ala Gly Tyr Pro
305                 310                 315                 320
Pro Gln Phe Leu Pro His Gly Val Ala Leu Asp Pro Thr Lys Pro Gly
            325                 330                 335
```

- 9 -

```
Ser Leu Val Gly Ala Gln Leu Ala Ala Ala Ala Gly Ser Leu Gly
            340               345               350
Cys Ser Lys Pro Ala Gly Ser Ser Pro Leu Ala Gly Ala Ser Pro Pro
            355               360               365
Ser Val Met Thr Ala Ser Leu Cys Arg Asp Pro Tyr Cys Leu Ser Tyr
            370               375               380
His Cys Ala Ser His Leu Ala Gly Ala Ala Ala Ala Ser Ala Ser Cys
385               390               395               400
Ala His Asp Pro Ala Ala Ala Ala Ala Leu Lys Ser Gly Tyr Pro
            405               410               415
Leu Val Tyr Pro Thr His Pro Leu His Gly Val His Ser Ser Leu Thr
            420               425               430
Ala Ala Ala Ala Ala Gly Ala Thr Pro Pro Ser Leu Ala Gly His Pro
            435               440               445
Leu Tyr Pro Tyr Gly Phe Met Leu Pro Asn Asp Pro Leu Pro His Ile
            450               455               460
Cys Asn Trp Val Ser Ala Asn Gly Pro Cys Asp Lys Arg Phe Ala Thr
465               470               475               480
Ser Glu Glu Leu Leu Ser His Leu Arg Thr His Thr Ala Phe Pro Gly
            485               490               495
Thr Asp Lys Leu Leu Ser Gly Tyr Pro Ser Ser Ser Ser Met Ala Ser
            500               505               510
Ala Ala Ala Ala Ala Met Ala Cys His Met His Ile Pro Thr Ser Gly
            515               520               525
Ala Pro Gly Ser Pro Gly Asp Ala Gly Ala Ala Gln Pro Pro Pro Arg
            530               535               540
Ala Gly Thr Gln Gln Pro Leu Pro Pro Leu Leu Gln Glu Pro Ala Ser
545               550               555               560
His Ala Trp Arg Pro Arg Ala Gly Ala Arg Arg His Arg Thr Val Leu
            565               570               575
Leu Pro Leu Arg Pro Leu Arg Thr Glu Thr Asp His Arg Leu Gly Ala
            580               585               590
Gly
```

```
<210> 16
<211> 1938
<212> DNA
<213> Homo Sapien
```

```
<400> 16
gtttcctcgc cagagccccg gctggacacg cagcggctcg catcgcagag cgcagcgccg      60
gcgcggggcc gcgagaacgc agcgcagggg agcagcccga ggcggacacc gcgagccgcc     120
cggcactccc gcagtccagc cggctcctct agcccggcca cggctccgct gcgggccacc     180
caggattact cgcgtctggc tccaggcgcc gagaaggcgc gctgggcgcc cgtggccgcc     240
gcgccagctc ctcctcctcc cgctgctcct gctcccgggg cgagcgcgca gccccgagcc     300
cgccccgcgc ctccccggagc cctccccccc gctgctccca tgcgcgcggg ctcgtccccg     360
gccggcagca ccaagccttt tgtgcacgcc gtgcccccct ctgacccccct cgcgccaggcc    420
aaccgcctgc caatcaaggt gctgaagatg ctgacggcac gaactggcca cattttgcac     480
cccgagtacc tgcagccccct gccttccacg ccggtcagcc ccatcgagct cgatgccaag    540
aagagcccgc tggcgctgtt ggcgcaaaca tgttcgcaga tcgggaagcc cgaccccctcg    600
ccctcctcca aactctcctc gaagtcggga ttccgggtac cgagcgccac ctgccagcca     660
ttcacgccca ggacaggcag cccgagctcc agcgcctcgg cctgctcgcc gggaggtatg     720
ctgtcctcgg ccggggggtgc cccggagggc aaggacgaca agaaagacac cgacgtgggc    780
ggcggtggca agggcaccgg gggcgcctcg gccgaagggg acccacgggg ctggcacac     840
```

```
ggccggatta gctgcggcgg cgggattaat gtggatgtga accagcatcc ggatgggggc    900
ccgggaggca aggctctggg ctcggactgc ggcggttcat cgggctccag ctccggctcc    960
ggccccagcg cgcccacctc ctcctcagtg ttgggctctg ggctggtggc tcccgtgtca   1020
ccctacaagc cgggccagac agtgttccct ctgcctcccg cgggtatgac ctacccaggc   1080
agcctggccg gggcctacgc cggctacccg ccccagttcc tgccacacgg cgtggcactt   1140
gaccccacca agccgggcag cctggtgggg gcgcagctgg cggcggccgc ggccgggtct   1200
ctgggctgca gtaagccggc cggctccagc cctttggccg gagcgtctcc gccgtccgtg   1260
atgacagcca gtttgtgccg ggacccttac tgcctcagct accactgcgc tagccacctg   1320
gcaggggcgg cggccgccag cgcttcttgc gcacatgatc cggctgctgc ggctgcggcg   1380
ctgaagtccg gatacccgct ggtgtacccc acgcacccgc tgcacggtgt gcactcctcg   1440
ctaacggccg ccgcggctgc tggcgccaca ccgccctccc tggccggcca ccccctctac   1500
ccctacggct ttatgctccc taacgaccca ctcccccaca tctgcaactg ggtgtcggcc   1560
aacgggccgt gcgacaagcg cttcgccacg tccgaagagc tgctgagcca cttgcggacc   1620
catacggcat ttcccgggac agacaaactg ctgtcgggct accccagctc gtcgtctatg   1680
gccagcgctg ccgcggccgc catggcttgc cacatgcaca tccccacctc gggcgcaccg   1740
ggcagccctg ggacgctggc gctgcgcagc ccccaccacg cgctgggact cagcagccgc   1800
taccacccct actccaagag cccgcttccc acgcctggcg ccccgtgcc ggtgcccgcc    1860
gccaccggac cgtactactc ccctacgcc ctctacggac agagactgac caccgcctcg    1920
gcgctggggt atcagtga                                                1938
```

<210> 17
<211> 645
<212> PRT
<213> Homo Sapien

<400> 17
```
Val Ser Ser Pro Glu Pro Arg Leu Asp Thr Gln Arg Leu Ala Ser Gln
 1               5                  10                  15
Ser Ala Ala Pro Ala Arg Gly Arg Glu Asn Ala Ala Gln Gly Ser Ser
             20                  25                  30
Pro Arg Arg Thr Pro Arg Ala Ala Arg His Ser Arg Ser Pro Ala Gly
         35                  40                  45
Ser Ser Ser Pro Ala Thr Ala Pro Leu Arg Ala Thr Gln Asp Tyr Ser
     50                  55                  60
Arg Leu Ala Pro Gly Ala Glu Lys Ala Arg Trp Ala Pro Val Ala Ala
65                  70                  75                  80
Ala Pro Ala Pro Pro Pro Ala Ala Pro Ala Pro Gly Ala Ser Ala
             85                  90                  95
Gln Pro Arg Ala Arg Pro Ala Pro Pro Gly Ala Leu Pro Pro Ala Ala
            100                 105                 110
Pro Met Arg Ala Gly Ser Ser Pro Ala Gly Ser Thr Lys Pro Phe Val
            115                 120                 125
His Ala Val Pro Pro Ser Asp Pro Leu Arg Gln Ala Asn Arg Leu Pro
        130                 135                 140
Ile Lys Val Leu Lys Met Leu Thr Ala Arg Thr Gly His Ile Leu His
145                 150                 155                 160
Pro Glu Tyr Leu Gln Pro Leu Pro Ser Thr Pro Val Ser Pro Ile Glu
                165                 170                 175
Leu Asp Ala Lys Lys Ser Pro Leu Ala Leu Leu Ala Gln Thr Cys Ser
            180                 185                 190
Gln Ile Gly Lys Pro Asp Pro Ser Pro Ser Ser Lys Leu Ser Ser Lys
            195                 200                 205
Ser Gly Phe Arg Val Pro Ser Ala Thr Cys Gln Pro Phe Thr Pro Arg
    210                 215                 220
Thr Gly Ser Pro Ser Ser Ser Ala Ser Ala Cys Ser Pro Gly Gly Met
```

- 11 -

```
     225                    230                       235                        240
Leu Ser Ser Ala Gly Gly Ala Pro Glu Gly Lys Asp Asp Lys Lys Asp
                    245             250                 255
Thr Asp Val Gly Gly Gly Gly Lys Gly Thr Gly Gly Ala Ser Ala Glu
                260             265                 270
Gly Gly Pro Thr Gly Leu Ala His Gly Arg Ile Ser Cys Gly Gly Gly
            275             280             285
Ile Asn Val Asp Val Asn Gln His Pro Asp Gly Gly Pro Gly Gly Lys
        290             295             300
Ala Leu Gly Ser Asp Cys Gly Gly Ser Ser Gly Ser Ser Ser Gly Ser
305             310             315                 320
Gly Pro Ser Ala Pro Thr Ser Ser Ser Val Leu Gly Ser Gly Leu Val
                325             330             335
Ala Pro Val Ser Pro Tyr Lys Pro Gly Gln Thr Val Phe Pro Leu Pro
            340             345             350
Pro Ala Gly Met Thr Tyr Pro Gly Ser Leu Ala Gly Ala Tyr Ala Gly
            355             360             365
Tyr Pro Pro Gln Phe Leu Pro His Gly Val Ala Leu Asp Pro Thr Lys
        370             375             380
Pro Gly Ser Leu Val Gly Ala Gln Leu Ala Ala Ala Ala Ala Gly Ser
385             390             395                 400
Leu Gly Cys Ser Lys Pro Ala Gly Ser Ser Pro Leu Ala Gly Ala Ser
                405             410             415
Pro Pro Ser Val Met Thr Ala Ser Leu Cys Arg Asp Pro Tyr Cys Leu
            420             425             430
Ser Tyr His Cys Ala Ser His Leu Ala Gly Ala Ala Ala Ala Ser Ala
        435             440             445
Ser Cys Ala His Asp Pro Ala Ala Ala Ala Ala Leu Lys Ser Gly
    450             455             460
Tyr Pro Leu Val Tyr Pro Thr His Pro Leu His Gly Val His Ser Ser
465             470             475                 480
Leu Thr Ala Ala Ala Ala Gly Ala Thr Pro Pro Ser Leu Ala Gly
                485             490                 495
His Pro Leu Tyr Pro Tyr Gly Phe Met Leu Pro Asn Asp Pro Leu Pro
            500             505             510
His Ile Cys Asn Trp Val Ser Ala Asn Gly Pro Cys Asp Lys Arg Phe
            515             520             525
Ala Thr Ser Glu Glu Leu Leu Ser His Leu Arg Thr His Thr Ala Phe
        530             535             540
Pro Gly Thr Asp Lys Leu Leu Ser Gly Tyr Pro Ser Ser Ser Ser Met
545             550             555                 560
Ala Ser Ala Ala Ala Ala Ala Met Ala Cys His Met His Ile Pro Thr
                565             570                 575
Ser Gly Ala Pro Gly Ser Pro Gly Thr Leu Ala Leu Arg Ser Pro His
            580             585             590
His Ala Leu Gly Leu Ser Ser Arg Tyr His Pro Tyr Ser Lys Ser Pro
            595             600             605
Leu Pro Thr Pro Gly Ala Pro Val Pro Val Pro Ala Ala Thr Gly Pro
    610             615       .       620
Tyr Tyr Ser Pro Tyr Ala Leu Tyr Gly Gln Arg Leu Thr Thr Ala Ser
625             630             635                 640
Ala Leu Gly Tyr Gln
                645


<210> 18
```

<211> 4022
<212> DNA
<213> Homo Sapien

<220>
<221> misc_feature
<222> (1)...(4022)
<223> n = A,T,C or G

<400> 18
```
gccgagcacc gcgcaccgcg tcatggggggc cgcctcgggc cgccgggggc cggggctgct      60
gctgccgctg ccgctgctgt tgctgctgcc gccgcagccc gccctggcgt tggaccccgg     120
gctgcagccc ggcaactttt ctgctgacga ggccggggcg cagctcttcg cgcagagcta     180
caactccagc gccgaacagg tgctgttcca gagcgtggcc gccagctggg cgcacgacac     240
caacatcacc gcggagaatg ncnaaggcgc caggaggaag cagccctgct cagccaggag     300
tttgcggagg cctgggggcca gaaggccaag gagctgtatg aaccgatctg gcagaacttc     360
acggacccgc agctgcgcag gatcatcgga gctgtgcgca ccctgggctc tgccaacctg     420
cccctggcta agcggcagca gtacaacgcc ctgctaagca acatgagcag gatctactcc     480
accgccaagg tctgcctccc caacaagact gccacctgct ggtccctgga cccagatctc     540
accaacatcc tggcttcctc gcgaagctac gccatgctcc tgtttgcctg ggagggctgg     600
cacaacgctg cgggcatccc gctgaaaccg ctgtacgagg atttcactgc cctcagcaat     660
gaagcctaca agcaggacgg cttcacagac acggggggcct actggcgctc ctggtacaac     720
tcccccacct tcgaggacga tctggaacac ctctaccaac agctagagcc cctctacctg     780
aacctccatg ccttcgtccg ccgcgcactg catcgccgat acggagacag atacatcaac     840
ctcagggggac ccatccctgc tcatctgctg ggagacatgt gggcccagag ctgggaaaac     900
atctacgaca tggtggtgcc tttcccagac aagcccaacc tcgatgtcac cagtactatg     960
ctgcagcagg gctggaacgc cacgcacatg ttccgggtgg cagaggagtt cttcacctcc    1020
ctggagctct cccccatgcc tcccgagttc tgggaaggggt cgatgctgga gaagccggcc    1080
gacggggcggg aagtggtgtg ccacgcctcg gcttgggact tctacaacag gaaagacttc    1140
aggatcaagc agtgcacacg ggtcacgatg gaccagctct ccacagtgca ccatgagatg    1200
ggccatatac agtactacct gcagtacaag gatctgcccg tctccctgcg tcggggggcc    1260
aaccccggct tccatgaggc cattggggac gtgctggcgc tctcggtctc cactcctgaa    1320
catctgcaca aaatcggcct gctggaccgt gtcaccaatg acacggaaag tgacatcaat    1380
tacttgctaa aaatggcact ggaaaaaatt gccttcctgc cctttggcta cttggtggac    1440
cagtggcgct ggggggtctt tagtgggcgt accccccctt cccgctacaa cttcgactgg    1500
tggtatcttc gaaccaagta tcaggggatc tgtcctcctg ttacccgaaa cgaaacccac    1560
tttgatgctg gagctaagtt tcatgttcca aatgtgacac catacatcag gtactttgtg    1620
agttttgtcc tgcagttcca gttccatgaa gccctgtgca aggaggcagg ctatgagggc    1680
ccactgcacc agtgtgacat ctaccggtcc accaaggcag gggccaagct ccggaaggtg    1740
ctgcaggctg gctcctccag gccctggcag gaggtgctga aggacatggt cggcttagat    1800
gccctggatg cccagccgct gctcaagtac ttccagccag tcacccagtg gctgcaggag    1860
cagaaccagc agaacggcga ggtcctgggc tggcccgagt accagtggca cccgccgttg    1920
cctgacaact accccggaggg catagacctg gtgactgatg aggctgaggc cagcaagttt    1980
gtggaggaat atgaccggac atcccaggtg gtgtggaacg agtatgccga ggccaactgg    2040
aactacaaca ccaacatcac cacagagacc agcaagattc tgctgcagaa gaacatgcaa    2100
atagccaacc acaccctgaa gtacggcacc caggccagga gtttgatgt gaaccagttg    2160
cagaacacca ctatcaagcg gatcataaag aaggttcagg acctagaacg ggcagcactg    2220
cctgcccagg agctggagga gtacaacaag atcctgttgg atatggaaac cacctacagc    2280
gtggccactg tgtgccaccc gaatggcagc tgcctgcagc tcgagccaga tctgacgaat    2340
gtgatggcca cgtcccggaa atatgaagac ctgttatggg catggggggg ctggcgagac    2400
aaggcggga gagccatcct ccagttttac ccgaaatacg tggaactcat caaccaggct    2460
gcccggctca atggctatgt agatgcaggg gactcgtgga ggtctatgta cgagacacca    2520
tccctggagc aagacctgga gcggctcttc caggagctgc agccactcta cctcaacctg    2580
catgcctacg tgcgccgggc cctgcaccgt cactacgggg cccagcacat caacctggag    2640
gggcccattc ctgctcacct gctggggaac atgtgggcgc agacctggtc caacatctat    2700
```

                              - 13 -

```
gacttggtgg tgcccttccc ttcagccccc tcgatggaca ccacagaggc tatgctaaag     2760
cagggctgga cgcccaggag gatgtttaag gaggctgatg atttcttcac ctccctgggg     2820
ctgctgcccg tgcctcctga gttctggaac aagtcgatgc tggagaagcc aaccgacggg     2880
cgggaggtgg tctgccacgc ctcggcctgg gacttctaca acggcaagga cttccggatc     2940
aagcagtgca ccaccgtgaa cttggaggac ctggtggtgg cccaccacga aatgggccac     3000
atccagtatt tcatgcagta caaagactta cctgtggcct tgagggaggg tgccaacccc     3060
ggcttccatg aggccattgg ggacgtgcta gccctctcag tgtctacgcc caagcacctg     3120
cacagtctca acctgctgag cagtgagggt ggcagcgacg agcatgacat caactttctg     3180
atgaagatgg cccttgacaa gatcgccttt atccccttca gctacctcgt cgatcagtgg     3240
cgctggaggg tatttgatgg aagcatcacc aaggagaact ataaccagga gtggtggagc     3300
ctcaggctga gtaccaggg cctctgcccc ccagtgccca ggactcaagg tgactttgac     3360
ccagggggcca agttccacat tccttctagc gtgccttaca tcaggtactt tgtcagcttc     3420
atcatccagt ccagttcca cgaggcactg tgccaggcag ctggccacac gggcccccctg     3480
cacaagtgtg acatctacca gtccaaggag gccgggcagc gcctggcgac cgccatgaag     3540
ctgggcttca gtaggccgtg gccggaagcc atgcagctga tcacgggcca gcccaacatg     3600
agcgcctcgg ccatgttgag ctacttcaag ccgctgctgg actggctccg cacggagaac     3660
gagctgcatg gggagaagct gggctggccg cagtacaact ggacgccgaa ctccgctcgc     3720
tcagaagggc ccctcccaga cagcggccgc gtcagcttcc tgggcctgga cctggatgcg     3780
cagcaggccc gcgtgggcca gtggctgctg ctcttcctgg gcatcgccct gctggtagcc     3840
accctgggcc tcagccagcg gctcttcagc atccgccacc gcagcctcca ccggcactcc     3900
cacgggcccc agttcggctc cgaggtggag ctgagacact cctgaggtga cccggctggg     3960
tcggccctgc ccaagggcct cccaccagag actgggatgg gaacactggt gggcagctga     4020
gg                                                                    4022
```

\<210\> 19
\<211\> 1265
\<212\> PRT
\<213\> Homo Sapien

\<220\>
\<221\> VARIANT
\<222\> (1)...(1265)
\<223\> Xaa = Any Amino Acid

\<400\> 19
```
Arg Gly Arg Gly Ala Ala Leu Arg Ala Glu Leu Gln Leu Gln Arg Arg
 1               5                  10                  15
Thr Gly Ala Val Pro Glu Arg Gly Arg Gln Leu Gly Ala Arg His Gln
            20                  25                  30
His His Arg Gly Glu Xaa Xaa Arg Arg Gln Glu Glu Ala Ala Leu Leu
            35                  40                  45
Ser Gln Glu Phe Ala Glu Ala Trp Gly Gln Lys Ala Lys Glu Leu Tyr
        50                  55                  60
Glu Pro Ile Trp Gln Asn Phe Thr Asp Pro Gln Leu Arg Arg Ile Ile
65                  70                  75                  80
Gly Ala Val Arg Thr Leu Gly Ser Ala Asn Leu Pro Leu Ala Lys Arg
                85                  90                  95
Gln Gln Tyr Asn Ala Leu Leu Ser Asn Met Ser Arg Ile Tyr Ser Thr
            100                 105                 110
Ala Lys Val Cys Leu Pro Asn Lys Thr Ala Thr Cys Trp Ser Leu Asp
        115                 120                 125
Pro Asp Leu Thr Asn Ile Leu Ala Ser Ser Arg Ser Tyr Ala Met Leu
        130                 135                 140
Leu Phe Ala Trp Glu Gly Trp His Asn Ala Ala Gly Ile Pro Leu Lys
145                 150                 155                 160
```

- 14 -

```
Pro Leu Tyr Glu Asp Phe Thr Ala Leu Ser Asn Glu Ala Tyr Lys Gln
                165                 170                 175
Asp Gly Phe Thr Asp Thr Gly Ala Tyr Trp Arg Ser Trp Tyr Asn Ser
            180                 185                 190
Pro Thr Phe Glu Asp Asp Leu Glu His Leu Tyr Gln Gln Leu Glu Pro
            195                 200                 205
Leu Tyr Leu Asn Leu His Ala Phe Val Arg Arg Ala Leu His Arg Arg
    210                 215                 220
Tyr Gly Asp Arg Tyr Ile Asn Leu Arg Gly Pro Ile Pro Ala His Leu
225                 230                 235                 240
Leu Gly Asp Met Trp Ala Gln Ser Trp Glu Asn Ile Tyr Asp Met Val
            245                 250                 255
Val Pro Phe Pro Asp Lys Pro Asn Leu Asp Val Thr Ser Thr Met Leu
            260                 265                 270
Gln Gln Gly Trp Asn Ala Thr His Met Phe Arg Val Ala Glu Glu Phe
            275                 280                 285
Phe Thr Ser Leu Glu Leu Ser Pro Met Pro Pro Glu Phe Trp Glu Gly
    290                 295                 300
Ser Met Leu Glu Lys Pro Ala Asp Gly Arg Glu Val Val Cys His Ala
305                 310                 315                 320
Ser Ala Trp Asp Phe Tyr Asn Arg Lys Asp Phe Arg Ile Lys Gln Cys
            325                 330                 335
Thr Arg Val Thr Met Asp Gln Leu Ser Thr Val His His Glu Met Gly
            340                 345                 350
His Ile Gln Tyr Tyr Leu Gln Tyr Lys Asp Leu Pro Val Ser Leu Arg
            355                 360                 365
Arg Gly Ala Asn Pro Gly Phe His Glu Ala Ile Gly Asp Val Leu Ala
    370                 375                 380
Leu Ser Val Ser Thr Pro Glu His Leu His Lys Ile Gly Leu Leu Asp
385                 390                 395                 400
Arg Val Thr Asn Asp Thr Glu Ser Asp Ile Asn Tyr Leu Leu Lys Met
            405                 410                 415
Ala Leu Glu Lys Ile Ala Phe Leu Pro Phe Gly Tyr Leu Val Asp Gln
            420                 425                 430
Trp Arg Trp Gly Val Phe Ser Gly Arg Thr Pro Pro Ser Arg Tyr Asn
            435                 440                 445
Phe Asp Trp Trp Tyr Leu Arg Thr Lys Tyr Gln Gly Ile Cys Pro Pro
    450                 455                 460
Val Thr Arg Asn Glu Thr His Phe Asp Ala Gly Ala Lys Phe His Val
465                 470                 475                 480
Pro Asn Val Thr Pro Tyr Ile Arg Tyr Phe Val Ser Phe Val Leu Gln
            485                 490                 495
Phe Gln Phe His Glu Ala Leu Cys Lys Glu Ala Gly Tyr Glu Gly Pro
            500                 505                 510
Leu His Gln Cys Asp Ile Tyr Arg Ser Thr Lys Ala Gly Ala Lys Leu
            515                 520                 525
Arg Lys Val Leu Gln Ala Gly Ser Ser Arg Pro Trp Gln Glu Val Leu
    530                 535                 540
Lys Asp Met Val Gly Leu Asp Ala Leu Asp Ala Gln Pro Leu Leu Lys
545                 550                 555                 560
Tyr Phe Gln Pro Val Thr Gln Trp Leu Gln Glu Gln Asn Gln Gln Asn
            565                 570                 575
Gly Glu Val Leu Gly Trp Pro Glu Tyr Gln Trp His Pro Pro Leu Pro
            580                 585                 590
Asp Asn Tyr Pro Glu Gly Ile Asp Leu Val Thr Asp Glu Ala Glu Ala
```

```
              595                    600                    605
Ser Lys Phe Val Glu Glu Tyr Asp Arg Thr Ser Gln Val Val Trp Asn
    610                    615                    620
Glu Tyr Ala Glu Ala Asn Trp Asn Tyr Asn Thr Asn Ile Thr Thr Glu
625                    630                    635                    640
Thr Ser Lys Ile Leu Leu Gln Lys Asn Met Gln Ile Ala Asn His Thr
                    645                    650                    655
Leu Lys Tyr Gly Thr Gln Ala Arg Lys Phe Asp Val Asn Gln Leu Gln
                    660                    665                    670
Asn Thr Thr Ile Lys Arg Ile Ile Lys Lys Val Gln Asp Leu Glu Arg
                    675                    680                    685
Ala Ala Leu Pro Ala Gln Glu Leu Glu Glu Tyr Asn Lys Ile Leu Leu
    690                    695          ·          700
Asp Met Glu Thr Thr Tyr Ser Val Ala Thr Val Cys His Pro Asn Gly
705                    710                    715                    720
Ser Cys Leu Gln Leu Glu Pro Asp Leu Thr Asn Val Met Ala Thr Ser
                    725                    730                    735
Arg Lys Tyr Glu Asp Leu Leu Trp Ala Trp Glu Gly Trp Arg Asp Lys
                    740                  ·745                    750
Ala Gly Arg Ala Ile Leu Gln Phe Tyr Pro Lys Tyr Val Glu Leu Ile
                    755                    760                    765
Asn Gln Ala Ala Arg Leu Asn Gly Tyr Val Asp Ala Gly Asp Ser Trp
                    770                    775                    780
Arg Ser Met Tyr Glu Thr Pro Ser Leu Glu Gln Asp Leu Glu Arg Leu
785                    790                    795                    800
Phe Gln Glu Leu Gln Pro Leu Tyr Leu Asn Leu His Ala Tyr Val Arg
                    805                    810                    815
Arg Ala Leu His Arg His Tyr Gly Ala Gln His Ile Asn Leu Glu Gly
                    820                    825                    830
Pro Ile Pro Ala His Leu Leu Gly Asn Met Trp Ala Gln Thr Trp Ser
                    835                    840                    845
Asn Ile Tyr Asp Leu Val Val Pro Phe Pro Ser Ala Pro Ser Met Asp
    850                    855                    860
Thr Thr Glu Ala Met Leu Lys Gln Gly Trp Thr Pro Arg Arg Met Phe
865                    870                    875                    880
Lys Glu Ala Asp Asp Phe Phe Thr Ser Leu Gly Leu Leu Pro Val Pro
                    885                    890                    895
Pro Glu Phe Trp Asn Lys Ser Met Leu Glu Lys Pro Thr Asp Gly Arg
                    900                    905                    910
Glu Val Val Cys His Ala Ser Ala Trp Asp Phe Tyr Asn Gly Lys Asp
                    915                    920                    925
Phe Arg Ile Lys Gln Cys Thr Thr Val Asn Leu Glu Asp Leu Val Val
    930                    935                    940
Ala His His Glu Met Gly His Ile Gln Tyr Phe Met Gln Tyr Lys Asp
945                    950                    955                    960
Leu Pro Val Ala Leu Arg Glu Gly Ala Asn Pro Gly Phe His Glu Ala
                    965                    970                    975
Ile Gly Asp Val Leu Ala Leu Ser Val Ser Thr Pro Lys His Leu His
                    980                    985                    990
Ser Leu Asn Leu Leu Ser Ser Glu Gly Gly Ser Asp Glu His Asp Ile
                    995                    1000                   1005
Asn Phe Leu Met Lys Met Ala Leu Asp Lys Ile Ala Phe Ile Pro Phe
    1010                   1015                   1020
Ser Tyr Leu Val Asp Gln Trp Arg Trp Arg Val Phe Asp Gly Ser Ile
1025                   1030                   1035                   1040
```

Thr Lys Glu Asn Tyr Asn Gln Glu Trp Trp Ser Leu Arg Leu Lys Tyr
               1045   1050   1055
Gln Gly Leu Cys Pro Pro Val Pro Arg Thr Gln Gly Asp Phe Asp Pro
               1060   1065   1070
Gly Ala Lys Phe His Ile Pro Ser Ser Val Pro Tyr Ile Arg Tyr Phe
               1075   1080   1085
Val Ser Phe Ile Ile Gln Phe Gln Phe His Glu Ala Leu Cys Gln Ala
            1090   1095   1100
Ala Gly His Thr Gly Pro Leu His Lys Cys Asp Ile Tyr Gln Ser Lys
1105   1110   1115   1120
Glu Ala Gly Gln Arg Leu Ala Thr Ala Met Lys Leu Gly Phe Ser Arg
               1125   1130   1135
Pro Trp Pro Glu Ala Met Gln Leu Ile Thr Gly Gln Pro Asn Met Ser
            1140   1145   1150
Ala Ser Ala Met Leu Ser Tyr Phe Lys Pro Leu Leu Asp Trp Leu Arg
            1155   1160   1165
Thr Glu Asn Glu Leu His Gly Glu Lys Leu Gly Trp Pro Gln Tyr Asn
         1170   1175   1180
Trp Thr Pro Asn Ser Ala Arg Ser Glu Gly Pro Leu Pro Asp Ser Gly
1185   1190   1195   1200
Arg Val Ser Phe Leu Gly Leu Asp Leu Asp Ala Gln Gln Ala Arg Val
               1205   1210   1215
Gly Gln Trp Leu Leu Leu Phe Leu Gly Ile Ala Leu Leu Val Ala Thr
               1220   1225   1230
Leu Gly Leu Ser Gln Arg Leu Phe Ser Ile Arg His Arg Ser Leu His
            1235   1240   1245
Arg His Ser His Gly Pro Gln Phe Gly Ser Glu Val Glu Leu Arg His
         1250   1255   1260
Ser
1265

<210> 20
<211> 954
<212> DNA
<213> Homo Sapien

<400> 20
cgccggagga gttctgcgtc tcggggtggt gactgggtcc agaatggctt cggattcggg   60
gaaccagggg accctctgca cgttggagtt cgcggtgcag atgacctgtc agagctgtgt   120
ggacgcggtg cgcaaatccc tgcaaggggt ggcaggtgtc caggatgtgg aggtgcactt   180
ggaggaccag atggtcttgg tacacaccac tctacccagc caggaggtgc aggctctcct   240
ggaaggcacg gggcggcagg cggtactcaa gggcatgggc agcggccagt tgcagaatct   300
gggggcagca gtggccatcc tggggggggcc tggcaccgtg caggggggtgg tgcgcttcct   360
acagctgacc cctgagcgct gcctcatcga gggaactatt gacggcctgg agcctgggct   420
gcatggactc cacgtccatc agtacgggga ccttacaaac aactgcaaca gctgtgggaa   480
tcacttttaac cctgatggag catctcatgg gggcccccag gactctgacc ggcaccgcgg   540
agacctgggc aatgtccgtg ctgatgctga cggccgcgcc atcttcagaa tggaggatga   600
gcagctgaag gtgtgggatg tgattggccg cagcctgatt attgatgagg agaagatga   660
cctgggccgg ggaggccatc ccttatccaa gatcacaggg aactccgggg agaggttggc   720
ctgtggcatc attgcacgct ccgctggcct tttccagaac cccaagcaga tctgctcttg   780
cgatggcctc accatctggg aggagcgagg ccggcccatc gctggcaagg cccgaaagg   840
agtcagcgca gcccctgccc acctttgagc agacctcact tggctctgtt gctgtcctcc   900
agggcgagca ctttccactt ccagaggggg ccagagggac tttgcctgcc cagt   954

<210> 21

- 17 -

<211> 288
<212> PRT
<213> Homo Sapien

<400> 21
Ala Gly Gly Val Leu Arg Leu Gly Val Val Thr Gly Ser Arg Met Ala
1   5   10   15
Ser Asp Ser Gly Asn Gln Gly Thr Leu Cys Thr Leu Glu Phe Ala Val
            20   25   30
Gln Met Thr Cys Gln Ser Cys Val Asp Ala Val Arg Lys Ser Leu Gln
        35   40   45
Gly Val Ala Gly Val Gln Asp Val Glu Val His Leu Glu Asp Gln Met
    50   55   60
Val Leu Val His Thr Thr Leu Pro Ser Gln Glu Val Gln Ala Leu Leu
65   70   75   80
Glu Gly Thr Gly Arg Gln Ala Val Leu Lys Gly Met Gly Ser Gly Gln
            85   90   95
Leu Gln Asn Leu Gly Ala Ala Val Ala Ile Leu Gly Gly Pro Gly Thr
            100   105   110
Val Gln Gly Val Val Arg Phe Leu Gln Leu Thr Pro Glu Arg Cys Leu
        115   120   125
Ile Glu Gly Thr Ile Asp Gly Leu Glu Pro Gly Leu His Gly Leu His
    130   135   140
Val His Gln Tyr Gly Asp Leu Thr Asn Asn Cys Asn Ser Cys Gly Asn
145   150   155   160
His Phe Asn Pro Asp Gly Ala Ser His Gly Gly Pro Gln Asp Ser Asp
            165   170   175
Arg His Arg Gly Asp Leu Gly Asn Val Arg Ala Asp Ala Asp Gly Arg
            180   185   190
Ala Ile Phe Arg Met Glu Asp Glu Gln Leu Lys Val Trp Asp Val Ile
        195   200   205
Gly Arg Ser Leu Ile Ile Asp Glu Gly Glu Asp Asp Leu Gly Arg Gly
    210   215   220
Gly His Pro Leu Ser Lys Ile Thr Gly Asn Ser Gly Glu Arg Leu Ala
225   230   235   240
Cys Gly Ile Ile Ala Arg Ser Ala Gly Leu Phe Gln Asn Pro Lys Gln
            245   250   255
Ile Cys Ser Cys Asp Gly Leu Thr Ile Trp Glu Glu Arg Gly Arg Pro
            260   265   270
Ile Ala Gly Lys Gly Pro Lys Gly Val Ser Ala Ala Pro Ala His Leu
    275   280   285

<210> 22
<211> 1006
<212> DNA
<213> Homo Sapien

<400> 22
atgggcctgg agctgtacct ggacctgctg tcccagccct gccgcgctgt ttacatcttt   60
gccaagaaga acgacattcc cttcgagctg cgcatcgtgg atctgattaa aggtcagcac   120
ttaagcgatg cctttgccca ggtgaacccc ctcaagaagg tgccagcctt gaaggacggg   180
gacttcacct tgacggagag tgtggccatc ctgctctacc tgacgcgcaa atataaggtc   240
cctgactact ggtaccctca ggacctgcag gcccgtgccc gtgtggatga gtacctggca   300
tggcagcaca cgactctgcg gagaagctgc ctccgggcct tgtggcataa ggtgatgttc   360
cctgtttttcc tgggtgagcc agtatctccc cagacactgg cagccaccct ggcagagttg   420

- 18 -

```
gatgtgaccc tgcagttgct cgaggacaag ttcctccaga acaaggcctt ccttactggt        480
cctcacatct ccttagctga cctcgtagcc atcacggagc tgatgcatcc cgtgggtgct        540
ggctgccaag tcttcgaagg ccgacccaag ctggccacat ggcggcagcg cgtggaggca        600
gcagtggggg aggacctctt ccaggaggcc catgaggtca ttctgaaggc caaggacttc        660
ccacctgcag accccaccat aaagcagaag ctgatgccct gggtgctggc catgatccgg        720
tgagctggga aacctcaccc ttgcaccgtc ctcagcagtc cacaaagcat tttcatttct        780
aatggcccat gggagccagg cccagaaagc aggaatggct tgcttaagac ttgcccaagt        840
cccagagcac ctcacctccc gaagccacca tccccaccct gtcttccaca gccgcctgaa        900
agccacaatg agaatgatgc acactgaggc cttgtgtccc tttaatcact gcatttcatt        960
ttgattttgg ataataaacc tgggctcagc ctgagcctct gcttct                      1006
```

<210> 23
<211> 240
<212> PRT
<213> Homo Sapien

<400> 23

```
Met Gly Leu Glu Leu Tyr Leu Asp Leu Leu Ser Gln Pro Cys Arg Ala
 1               5                  10                  15
Val Tyr Ile Phe Ala Lys Lys Asn Asp Ile Pro Phe Glu Leu Arg Ile
            20                  25                  30
Val Asp Leu Ile Lys Gly Gln His Leu Ser Asp Ala Phe Ala Gln Val
        35                  40                  45
Asn Pro Leu Lys Lys Val Pro Ala Leu Lys Asp Gly Asp Phe Thr Leu
    50                  55                  60
Thr Glu Ser Val Ala Ile Leu Leu Tyr Leu Thr Arg Lys Tyr Lys Val
65                  70                  75                  80
Pro Asp Tyr Trp Tyr Pro Gln Asp Leu Gln Ala Arg Ala Arg Val Asp
            85                  90                  95
Glu Tyr Leu Ala Trp Gln His Thr Thr Leu Arg Arg Ser Cys Leu Arg
            100                 105                 110
Ala Leu Trp His Lys Val Met Phe Pro Val Phe Leu Gly Glu Pro Val
            115                 120                 125
Ser Pro Gln Thr Leu Ala Ala Thr Leu Ala Glu Leu Asp Val Thr Leu
    130                 135                 140
Gln Leu Leu Glu Asp Lys Phe Leu Gln Asn Lys Ala Phe Leu Thr Gly
145                 150                 155                 160
Pro His Ile Ser Leu Ala Asp Leu Val Ala Ile Thr Glu Leu Met His
            165                 170                 175
Pro Val Gly Ala Gly Cys Gln Val Phe Glu Gly Arg Pro Lys Leu Ala
            180                 185                 190
Thr Trp Arg Gln Arg Val Glu Ala Ala Val Gly Glu Asp Leu Phe Gln
            195                 200                 205
Glu Ala His Glu Val Ile Leu Lys Ala Lys Asp Phe Pro Pro Ala Asp
    210                 215                 220
Pro Thr Ile Lys Gln Lys Leu Met Pro Trp Val Leu Ala Met Ile Arg
225                 230                 235                 240
```

<210> 24
<211> 2442
<212> DNA
<213> Homo Sapien

<400> 24

```
atggctgcgg cggcccagct ctctctgaca cagttatcaa gtgggaatcc tgtatatgaa        60
```
```

```
aaatactata gacaggttga tacaggcaat actggaaggg tgttggcttc tgatgctgct      120
gctttcctga aaaaatcagg gcttccagac ttgatacttg gaaagatttg ggatttagcc      180
gacacagatg gcaaaggtat cctgaacaaa caagaattct ttgttgcttt gcgtcttgtg      240
gcatgtgccc agaatggatt ggaagtttca ctaagtagtt tgaacctggc tgttcctcca      300
ccaagatttc ctgaagataa ggccaaatat gatgcaatat ttgatagttt aagcccagtg      360
aatggatttc tgtctggtga taaagtgaaa ccagtgttgc tcaactctaa gttacctgtg      420
gatatccttg aagagtttg ggagttgagt gatattgacc atgatggaat gcttgacaga      480
gatgagtttg cagttgccat gttttttggta tactgtgcac tggagaaaga acctgtgcca      540
atgtccttgc ctccagcctt ggtgccacca tctaagagaa aaacggtcag tatatcaggc      600
tctgtgcggt tgatccccte ttcagcatca gccaaggaat cttaccactc cttaccatct      660
gtaggcattt tacctaccaa agcaccatta agacagtggg ttgtatcccc tgcagaaaaa      720
gctaaatatg atgaaatctt cctgaaaact gataaagata tggacggatt tgtgtctgga      780
ttggaggtcc gtgaaatatt cttgaaaaca ggtttacctt ctaccttact agcccatata      840
tggtcattat gcgacacaaa ggactgtggg aagctttcaa aggatcagtt tgccttggct      900
tttcacttaa tcagtcagaa gttaatcaag ggcattgatc ctcctcacgt tcttactcct      960
gaaatgattc caccatcaga cagggccagt ttacaaaaga acatcatagg atcaagtcct     1020
gttgcagatt tctctgctat taggaacta gatactctta acaatgaaat agttgaccta     1080
cagagggaaa agaataatgt ggaacaggac cttaaggaga aggaagatac tattaaacag     1140
aggacaagtg aggttcagga tcttcaagat gaagttcaaa gggagaatac taatctgcaa     1200
aaactacagg cccagaaaca gcaggtacag gaactccttg atgaactgga tgagcagaaa     1260
gcccagctgg aggagcaact caaggaagtc agaaagaaat gtgctgagga ggcccaactg     1320
atctcttctc tgaaagctga attaactagt caggaatcgc agatctccac ttatgaagaa     1380
gaattggcaa aagctagaga agagctgagc cgtctacagc aagaaacagc agaattggag     1440
gagagtgtag agtcagggaa ggctcagttg gaacctcttc agcagcacct acaagattca     1500
caacaggaaa ttagttcaat gcaaatgaaa ctgatggaaa tgaaagattt ggaaaatcat     1560
aatagtcagt taaattggtg cagtagccca cacagcattc ttgtaaacgg agctacagat     1620
tattgcagcc tcagcaccag cagcagtgaa acagccaacc ttaatgaaca tgttgaaggc     1680
cagagcaacc tagagtctga gcccatacac caggaatctc catctgatcc ttttgttggc     1740
aatccatttg gtggtgatcc tttcaaaggt tcagatccat ttgcatcaga ctgtttcttc     1800
aggcaatcta ctgatccttt tgccacttca agcactgacc ctttcagtgc agccaacaat     1860
agcagtatta catcggtaga aacgttgaag cacaatgatc cttttgctcc tggtggaaca     1920
gttgttgcag caagcgattc agccacagac ccctttgctt ctgtttttgg gaatgaatca     1980
tttggaggtg atttgctga cttcagcaca ttgtcaaagg tcaacaatga agatcctttt     2040
cgttcagcca catcgagctc tgtcagcaac gtagtgatta caaaaaatgt atttgaggaa     2100
acatcggtca aaagtgaaga tgaaccccca gcactgccac caaagatcgg aactccaaca     2160
agaccctgcc ctctaccacc tggcaacgat agccccaaag aaaaagatcc tgaaatgttt     2220
tgtgatccat tcacttctgc tactaccact accaataaag aggctgatcc aagcaatttt     2280
gccaacttca gtgcttatcc ctctgaagaa gatatgatcg aatgggccaa gagggaaagt     2340
gagagagagg aagagcagag gcttgcccga ctaaatcagc aggaacaaga agacttagaa     2400
ctggctattg cactcagcaa atctgagata tcagaagcat ga                       2442
```

<210> 25
<211> 813
<212> PRT
<213> Homo Sapien

<400> 25

```
Met Ala Ala Ala Ala Gln Leu Ser Leu Thr Gln Leu Ser Ser Gly Asn
1               5                   10                  15
Pro Val Tyr Glu Lys Tyr Tyr Arg Gln Val Asp Thr Gly Asn Thr Gly
            20                  25                  30
Arg Val Leu Ala Ser Asp Ala Ala Ala Phe Leu Lys Lys Ser Gly Leu
        35                  40                  45
Pro Asp Leu Ile Leu Gly Lys Ile Trp Asp Leu Ala Asp Thr Asp Gly
    50                  55                  60
```

```
Lys Gly Ile Leu Asn Lys Gln Glu Phe Phe Val Ala Leu Arg Leu Val
65              70          75              80
Ala Cys Ala Gln Asn Gly Leu Glu Val Ser Leu Ser Ser Leu Asn Leu
            85          90              95
Ala Val Pro Pro Pro Arg Phe Pro Glu Asp Lys Ala Lys Tyr Asp Ala
            100         105             110
Ile Phe Asp Ser Leu Ser Pro Val Asn Gly Phe Leu Ser Gly Asp Lys
        115             120             125
Val Lys Pro Val Leu Leu Asn Ser Lys Leu Pro Val Asp Ile Leu Gly
        130             135         140
Arg Val Trp Glu Leu Ser Asp Ile Asp His Asp Gly Met Leu Asp Arg
145             150             155             160
Asp Glu Phe Ala Val Ala Met Phe Leu Val Tyr Cys Ala Leu Glu Lys
            165             170             175
Glu Pro Val Pro Met Ser Leu Pro Pro Ala Leu Val Pro Pro Ser Lys
            180             185             190
Arg Lys Thr Val Ser Ile Ser Gly Ser Val Arg Leu Ile Pro Ser Ser
        195             200             205
Ala Ser Ala Lys Glu Ser Tyr His Ser Leu Pro Ser Val Gly Ile Leu
        210             215             220
Pro Thr Lys Ala Pro Leu Arg Gln Trp Val Val Ser Pro Ala Glu Lys
225             230             235             240
Ala Lys Tyr Asp Glu Ile Phe Leu Lys Thr Asp Lys Asp Met Asp Gly
            245             250             255
Phe Val Ser Gly Leu Glu Val Arg Glu Ile Phe Leu Lys Thr Gly Leu
            260             265             270
Pro Ser Thr Leu Leu Ala His Ile Trp Ser Leu Cys Asp Thr Lys Asp
            275             280             285
Cys Gly Lys Leu Ser Lys Asp Gln Phe Ala Leu Ala Phe His Leu Ile
        290             295             300
Ser Gln Lys Leu Ile Lys Gly Ile Asp Pro Pro His Val Leu Thr Pro
305             310             315             320
Glu Met Ile Pro Pro Ser Asp Arg Ala Ser Leu Gln Lys Asn Ile Ile
            325             330             335
Gly Ser Ser Pro Val Ala Asp Phe Ser Ala Ile Lys Glu Leu Asp Thr
            340             345             350
Leu Asn Asn Glu Ile Val Asp Leu Gln Arg Glu Lys Asn Asn Val Glu
            355             360             365
Gln Asp Leu Lys Glu Lys Glu Asp Thr Ile Lys Gln Arg Thr Ser Glu
370             375             380
Val Gln Asp Leu Gln Asp Glu Val Gln Arg Glu Asn Thr Asn Leu Gln
385             390             395             400
Lys Leu Gln Ala Gln Lys Gln Gln Val Gln Glu Leu Leu Asp Glu Leu
            405             410             415
Asp Glu Gln Lys Ala Gln Leu Glu Glu Gln Leu Lys Glu Val Arg Lys
            420             425             430
Lys Cys Ala Glu Glu Ala Gln Leu Ile Ser Ser Leu Lys Ala Glu Leu
            435             440             445
Thr Ser Gln Glu Ser Gln Ile Ser Thr Tyr Glu Glu Glu Leu Ala Lys
            450             455             460
Ala Arg Glu Glu Leu Ser Arg Leu Gln Gln Glu Thr Ala Glu Leu Glu
465             470             475             480
Glu Ser Val Glu Ser Gly Lys Ala Gln Leu Glu Pro Leu Gln Gln His
            485             490             495
Leu Gln Asp Ser Gln Gln Glu Ile Ser Ser Met Gln Met Lys Leu Met
```

- 21 -

```
                  500                       505                       510
Glu Met Lys Asp Leu Glu Asn His Asn Ser Gln Leu Asn Trp Cys Ser
              515                       520                       525
Ser Pro His Ser Ile Leu Val Asn Gly Ala Thr Asp Tyr Cys Ser Leu
          530                       535                       540
Ser Thr Ser Ser Ser Glu Thr Ala Asn Leu Asn Glu His Val Glu Gly
545                       550                       555                       560
Gln Ser Asn Leu Glu Ser Glu Pro Ile His Gln Glu Ser Pro Ser Asp
                  565                       570                       575
Pro Phe Val Gly Asn Pro Phe Gly Gly Asp Pro Phe Lys Gly Ser Asp
                  580                       585                       590
Pro Phe Ala Ser Asp Cys Phe Phe Arg Gln Ser Thr Asp Pro Phe Ala
          595                       600                       605
Thr Ser Ser Thr Asp Pro Phe Ser Ala Ala Asn Asn Ser Ser Ile Thr
      610                       615                       620
Ser Val Glu Thr Leu Lys His Asn Asp Pro Phe Ala Pro Gly Gly Thr
625                       630                       635                       640
Val Val Ala Ala Ser Asp Ser Ala Thr Asp Pro Phe Ala Ser Val Phe
                  645                       650                       655
Gly Asn Glu Ser Phe Gly Gly Gly Phe Ala Asp Phe Ser Thr Leu Ser
              660                       665                       670
Lys Val Asn Asn Glu Asp Pro Phe Arg Ser Ala Thr Ser Ser Ser Val
              675                       680                       685
Ser Asn Val Val Ile Thr Lys Asn Val Phe Glu Glu Thr Ser Val Lys
          690                       695                       700
Ser Glu Asp Glu Pro Pro Ala Leu Pro Pro Lys Ile Gly Thr Pro Thr
705                       710                       715                       720
Arg Pro Cys Pro Leu Pro Pro Gly Asn Asp Ser Pro Lys Glu Lys Asp
                  725                       730                       735
Pro Glu Met Phe Cys Asp Pro Phe Thr Ser Ala Thr Thr Thr Thr Asn
              740                       745                       750
Lys Glu Ala Asp Pro Ser Asn Phe Ala Asn Phe Ser Ala Tyr Pro Ser
              755                       760                       765
Glu Glu Asp Met Ile Glu Trp Ala Lys Arg Glu Ser Glu Arg Glu Glu
          770                       775                       780
Glu Gln Arg Leu Ala Arg Leu Asn Gln Gln Glu Gln Glu Asp Leu Glu
785                       790                       795                       800
Leu Ala Ile Ala Leu Ser Lys Ser Glu Ile Ser Glu Ala
          805                       810
```

```
<210>  26
<211>  1357
<212>  DNA
<213>  Homo Sapien

<400>  26
cccggggccg gcggtgccgg ggtcatcggg atgatgcgga cgcagtgtct gctggggctg      60
cgcacgttcg tggccttcgc cgccaagctc tggagcttct tcatttacct tctgcggagg     120
cagatccgca cggtaattca gtaccaaact gttcgatatg atatcctccc cttatctcct     180
gtgtcccgga atcggctagc ccaggtgaag aggaagatcc tggtgctgga tctggatgag     240
acacttattc actcccacca tgatggggtc ctgaggccca cagtccggcc tggtacgcct     300
cctgacttca tcctcaaggt ggtaatagac aaacatcctg tccggttttt tgtacataag     360
aggccccatg tggatttctt cctggaagtg gtgagccagt ggtacgagct ggtggtgttt     420
acagcaagca tggagatcta tggctctgct gtggcagata aactggacaa tagcagaagc     480
attcttaaga ggagatatta cagacagcac tgcactttgg agttgggcag ctacatcaag     540
```

```
gacctctctg tggtccacag tgacctctcc agcattgtga tcctggataa ctccccaggg      600
gcttacagga gccatccaga caatgccatc cccatcaaat cctggttcag tgaccccagc      660
gacacagccc ttctcaacct gctcccaatg ctggatgccc tcaggttcac cgctgatgtt      720
cgttccgtgc tgagccgaaa ccttcaccaa catcggctct ggtgacagct gctcccctc      780
cacctgagtt gggggtgggg ggaaagggag ggcgagccct gggatgccg tctgatgccc      840
tgtccaatgt gaggactgcc tgggcaggt ctgcccctcc caccctctc tgccctggga      900
gccctacact ccacttggga gtctggatgg acacatgggc caggggctct gaagcagcct      960
cactcttaac ttcgtgttca cactccatgg aaaccccaga ctgggacaca ggcggaagcc     1020
taggagagcc gaatcagtgt ttgtgaagag gcaggactgg ccagagtgac agacatacgg     1080
tgatccagga ggctcaaaga gaagccaagt cagctttgtt gtgatttgat ttttttttaaa    1140
aaactcttgt acaaaactga tctaattctt cactcctgct ccaagggctg ggctgtgggt     1200
gggatactgg gattttgggc cactggattt ccctaaaatt tgtccccccct ttactctccc    1260
tctattttc tctccttaga ctccctcaga cctgtaacca gctttgtgtc tttttttccatt    1320
ttctctcttt taaaccatgc attataactt tgaaacc                              1357
```

<210> 27
<211> 254
<212> PRT
<213> Homo Sapien

<400> 27

```
Pro Gly Ala Gly Gly Ala Gly Val Ile Gly Met Met Arg Thr Gln Cys
 1               5                  10                  15
Leu Leu Gly Leu Arg Thr Phe Val Ala Phe Ala Ala Lys Leu Trp Ser
            20                  25                  30
Phe Phe Ile Tyr Leu Leu Arg Arg Gln Ile Arg Thr Val Ile Gln Tyr
        35                  40                  45
Gln Thr Val Arg Tyr Asp Ile Leu Pro Leu Ser Pro Val Ser Arg Asn
    50                  55                  60
Arg Leu Ala Gln Val Lys Arg Lys Ile Leu Val Leu Asp Leu Asp Glu
65                  70                  75                  80
Thr Leu Ile His Ser His His Asp Gly Val Leu Arg Pro Thr Val Arg
                85                  90                  95
Pro Gly Thr Pro Pro Asp Phe Ile Leu Lys Val Val Ile Asp Lys His
            100                 105                 110
Pro Val Arg Phe Phe Val His Lys Arg Pro His Val Asp Phe Phe Leu
            115                 120                 125
Glu Val Val Ser Gln Trp Tyr Glu Leu Val Val Phe Thr Ala Ser Met
    130                 135                 140
Glu Ile Tyr Gly Ser Ala Val Ala Asp Lys Leu Asp Asn Ser Arg Ser
145                 150                 155                 160
Ile Leu Lys Arg Arg Tyr Tyr Arg Gln His Cys Thr Leu Glu Leu Gly
                165                 170                 175
Ser Tyr Ile Lys Asp Leu Ser Val Val His Ser Asp Leu Ser Ser Ile
            180                 185                 190
Val Ile Leu Asp Asn Ser Pro Gly Ala Tyr Arg Ser His Pro Asp Asn
            195                 200                 205
Ala Ile Pro Ile Lys Ser Trp Phe Ser Asp Pro Ser Asp Thr Ala Leu
    210                 215                 220
Leu Asn Leu Leu Pro Met Leu Asp Ala Leu Arg Phe Thr Ala Asp Val
225                 230                 235                 240
Arg Ser Val Leu Ser Arg Asn Leu His Gln His Arg Leu Trp
                245                 250
```

<210> 28
```

- 23 -
```

<211> 1812
<212> DNA
<213> Homo Sapien

<400> 28

```
atgccggccg tgagcctccc gcccaaggag aatgcgctct tcaagcggat cttgaggtgt      60
tatgaacata aacagtatag aaatggattg aaattctgta acaaatact ttctaatccc     120
aaatttgcag agcatggagg ttggcacgtt tatggccttc ttcagaggtc agacaagaag     180
tatgatgaag ccattaagtg ttacagaaat gcactaaaat gggataaaga caatcttcaa     240
atcttaaggg acctttcctt actacagatt caaatgcgag atcttgaggg ttacaggaca     300
tcccctgaca aggtggatta tgaatatagt gaactactct tatatcagaa tcaagttctt     360
cgggaagcag gtctctatag agaagctttg gaacatcttt gtacctatga aaagcagatt     420
tgtgataaac ttgctgtaga agaaaccaaa ggggaacttc tgttgcaact atgtcgtttg     480
gaagatgctg cagatgttta tagaggattg caagagagaa atcctgaaaa ctgggcctat     540
tacaaaggct tggaaaaagc actcaagcca gctaatatgt tagaacggct aaaaatttat     600
gaggaagcct ggactaaata tcccagggga ctggtgccaa gaaggctgcc gttaaacttt     660
ttatctggtg agaagtttaa agaatgtttg ataagttcc taaggatgaa tttcagcaag     720
ggttgcccac cagtcttcaa tactttaaga tcattataca agacaaaga aaaggtggca     780
atcatagaag agttagtagt aggttatgaa acctctctaa aaagctgccg gttatttaac     840
cccaatgatg atggaaagga ggaaccacca accacattac tttgggtcca gtactacttg     900
gcacaacatt atgacaaaat tggtcagcca tctattgctt tggagtacat aaatactgct     960
attgaaagta cacctacatt aatagaactc tttctcgtga agctaaaat ctataagcat    1020
gctggaaata ttaaagaagc tgcaaggtgg atggatgagg cccaggcctt ggacacagca    1080
gacagattta tcaactccaa atgtgcaaaa tacatgctaa aagccaacct gattaaagaa    1140
gctgaagaaa tgtgctcaaa gtttacaagg gaaggaacat cagcggtaga gaatttgaat    1200
gaaatgcagt gcatgtggtt ccaaacagaa tgtgcccagg cttataaagc aatgaataaa    1260
tttggtgaag cacttaagaa atgtcatgag attgagagac atttttataga aatcactgat    1320
gaccagtttg actttcatac atactgtatg aggaagatta cccttagatc atatgtggac    1380
ttattaaaac tagaagatgt acttcgacag catccatttt acttcaaggc agcaagaatt    1440
gctatagaga tctatttgaa gcttcatgac aacccccctta cagatgagaa taaagaacac    1500
gaagctgata cagctgccaa aatggtatat tacttagatc cttctagtca gaagcgagct    1560
atagagttgg caacaacact tgatgaatct ctcactaaca gaaacctcca gacatgtatg    1620
gaggtattgg aagccttgta tgatggtagc ctaggagact gtaaagaagc tgctgaaatt    1680
tatagagcaa attgtcataa gcttttccct tatgctttgg ctttcatgcc tcctggatat    1740
gaagaggata tgaagatcac agttaatgga gatagttctg cagaagctga agaactggcc    1800
aatgaaattt ga                                                         1812
```

<210> 29
<211> 603
<212> PRT
<213> Homo Sapien

<400> 29

```
Met Pro Ala Val Ser Leu Pro Pro Lys Glu Asn Ala Leu Phe Lys Arg
 1               5                  10                  15
Ile Leu Arg Cys Tyr Glu His Lys Gln Tyr Arg Asn Gly Leu Lys Phe
             20                  25                  30
Cys Lys Gln Ile Leu Ser Asn Pro Lys Phe Ala Glu His Gly Gly Trp
         35                  40                  45
His Val Tyr Gly Leu Leu Gln Arg Ser Asp Lys Lys Tyr Asp Glu Ala
     50                  55                  60
Ile Lys Cys Tyr Arg Asn Ala Leu Lys Trp Asp Lys Asp Asn Leu Gln
 65                  70                  75                  80
Ile Leu Arg Asp Leu Ser Leu Leu Gln Ile Gln Met Arg Asp Leu Glu
                 85                  90                  95
```

- 24 -

Gly Tyr Arg Thr Ser Pro Asp Lys Val Asp Tyr Glu Tyr Ser Glu Leu
              100   105   110
Leu Leu Tyr Gln Asn Gln Val Leu Arg Glu Ala Gly Leu Tyr Arg Glu
              115   120   125
Ala Leu Glu His Leu Cys Thr Tyr Glu Lys Gln Ile Cys Asp Lys Leu
    130   135   140
Ala Val Glu Glu Thr Lys Gly Glu Leu Leu Leu Gln Leu Cys Arg Leu
145   150   155   160
Glu Asp Ala Ala Asp Val Tyr Arg Gly Leu Gln Glu Arg Asn Pro Glu
                  165   170   175
Asn Trp Ala Tyr Tyr Lys Gly Leu Glu Lys Ala Leu Lys Pro Ala Asn
              180   185   190
Met Leu Glu Arg Leu Lys Ile Tyr Glu Glu Ala Trp Thr Lys Tyr Pro
              195   200   205
Arg Gly Leu Val Pro Arg Arg Leu Pro Leu Asn Phe Leu Ser Gly Glu
    210   215   220
Lys Phe Lys Glu Cys Leu Asp Lys Phe Leu Arg Met Asn Phe Ser Lys
225   230   235   240
Gly Cys Pro Pro Val Phe Asn Thr Leu Arg Ser Leu Tyr Lys Asp Lys
                  245   250   255
Glu Lys Val Ala Ile Ile Glu Glu Leu Val Val Gly Tyr Glu Thr Ser
                  260   265   270
Leu Lys Ser Cys Arg Leu Phe Asn Pro Asn Asp Asp Gly Lys Glu Glu
              275   280   285
Pro Pro Thr Thr Leu Leu Trp Val Gln Tyr Tyr Leu Ala Gln His Tyr
    290   295   300
Asp Lys Ile Gly Gln Pro Ser Ile Ala Leu Glu Tyr Ile Asn Thr Ala
305   310   315   320
Ile Glu Ser Thr Pro Thr Leu Ile Glu Leu Phe Leu Val Lys Ala Lys
                  325   330   335
Ile Tyr Lys His Ala Gly Asn Ile Lys Glu Ala Ala Arg Trp Met Asp
              340   345   350
Glu Ala Gln Ala Leu Asp Thr Ala Asp Arg Phe Ile Asn Ser Lys Cys
    355   360   365
Ala Lys Tyr Met Leu Lys Ala Asn Leu Ile Lys Glu Ala Glu Glu Met
    370   375   380
Cys Ser Lys Phe Thr Arg Glu Gly Thr Ser Ala Val Glu Asn Leu Asn
385   390   395   400
Glu Met Gln Cys Met Trp Phe Gln Thr Glu Cys Ala Gln Ala Tyr Lys
              405   410   415
Ala Met Asn Lys Phe Gly Glu Ala Leu Lys Lys Cys His Glu Ile Glu
              420   425   430
Arg His Phe Ile Glu Ile Thr Asp Asp Gln Phe Asp Phe His Thr Tyr
    435   440   445
Cys Met Arg Lys Ile Thr Leu Arg Ser Tyr Val Asp Leu Leu Lys Leu
    450   455   460
Glu Asp Val Leu Arg Gln His Pro Phe Tyr Phe Lys Ala Ala Arg Ile
465   470   475   480
Ala Ile Glu Ile Tyr Leu Lys Leu His Asp Asn Pro Leu Thr Asp Glu
                  485   490   495
Asn Lys Glu His Glu Ala Asp Thr Ala Ala Lys Met Val Tyr Tyr Leu
              500   505   510
Asp Pro Ser Ser Gln Lys Arg Ala Ile Glu Leu Ala Thr Thr Leu Asp
    515   520   525
Glu Ser Leu Thr Asn Arg Asn Leu Gln Thr Cys Met Glu Val Leu Glu

```
                530                    535                    540
Ala Leu Tyr Asp Gly Ser Leu Gly Asp Cys Lys Glu Ala Ala Glu Ile
545                    550                    555                    560
Tyr Arg Ala Asn Cys His Lys Leu Phe Pro Tyr Ala Leu Ala Phe Met
                565                    570                    575
Pro Pro Gly Tyr Glu Glu Asp Met Lys Ile Thr Val Asn Gly Asp Ser
                580                    585                    590
Ser Ala Glu Ala Glu Glu Leu Ala Asn Glu Ile
        595                    600
```

```
<210> 30
<211> 1351
<212> DNA
<213> Homo Sapien
```

```
<400> 30
gcctcaggcc ggagcagccc catcatgccg agggagcgca gggagcggga tgcgaaggag    60
cgggacacca tgaaggagga cggcggcgcg gagttctcgg ctcgctccag gaagaggaag   120
gcaaacgtga ccgttgatcc agatgaagaa atggccaaaa tcgacaggac ggcgagggac   180
cagtgtggga gccagccttg ggacaataat gcagtctgtg cagacccctg ctccctgatc   240
cccacacctg acaaagaaga tgatgaccgg gtttacccaa actcaacgtg caagcctcgg   300
attattgcac catccagagg ctccccgctg cctgtactga gctgggcaaa tagagaggaa   360
gtctggaaaa tcatgttaaa caaggaaaag acatacttaa gggatcagca ctttcttgag   420
caacaccctc ttctgcagcc aaaaatgcga gcaattcttc tggattggtt aatggaggtg   480
tgtgaagtct ataaacttca caggagacc ttttacttgg cacaagattt ctttgaccgg   540
tatatggcga cacaagaaaa tgttgtaaaa actctttac agcttattgg gatttcatct   600
ttatttattg cagccaaact tgaggaaatc tatcctccaa agttgcacca gtttgcgtat   660
gtgacagatg gagcttgttc aggagatgaa attctcacca tggaattaat gattatgaag   720
gcccttaagt ggcgtttaag tccctgact attgtgtcct ggctgaatgt atacatgcag   780
gttgcatatc taaatgactt acatgaagtg ctactgccgc agtatcccca gcaaatcttt   840
atacagattg cagagctgtt ggatctctgt gtcctggatg ttgactgcct tgaatttcct   900
tatggtatac ttgctgcttc ggccttgtat catttctcgt catctgaatt gatgcaaaag   960
gtttcagggt atcagtggtg cgacatagag aactgtgtca agtggatggt tccatttgcc  1020
atggttataa gggagacggg gagctcaaaa ctgaagcact tcaggggcgt cgctgatgaa  1080
gatgcacaca acatacagac ccacagagac agcttggatt tgctggacaa agcccgagca  1140
aagaaagcca tgttgtctga acaaaatagg gcttctcctc tccccagtgg gctcctcacc  1200
ccgccacaga gcggtgttct gggctccgtt gtaccaagtg gagcaggtgg ttgcgggcaa  1260
gcgttgtgca gagcccatag ccagctgggc aggggggctga cctctccaca ttatcagttg  1320
acagtgtaca atgcctttga tgaactgttt t                                 1351
```

```
<210> 31
<211> 451
<212> PRT
<213> Homo Sapien
```

```
<220>
<221> VARIANT
<222> (1)...(451)
<223> Xaa = Any Amino Acid
```

```
<400> 31
Ala Ser Gly Arg Ser Ser Pro Ile Met Pro Arg Glu Arg Arg Glu Arg
 1               5                   10                  15
Asp Ala Lys Glu Arg Asp Thr Met Lys Glu Asp Gly Gly Ala Glu Phe
            20                  25                  30
```

```
Ser Ala Arg Ser Arg Lys Arg Lys Ala Asn Val Thr Val Asp Pro Asp
        35              40              45
Glu Glu Met Ala Lys Ile Asp Arg Thr Ala Arg Asp Gln Cys Gly Ser
    50              55              60
Gln Pro Trp Asp Asn Asn Ala Val Cys Ala Asp Pro Cys Ser Leu Ile
65              70              75              80
Pro Thr Pro Asp Lys Glu Asp Asp Asp Arg Val Tyr Pro Asn Ser Thr
            85              90              95
Cys Lys Pro Arg Ile Ile Ala Pro Ser Arg Gly Ser Pro Leu Pro Val
        100             105             110
Leu Ser Trp Ala Asn Arg Glu Glu Val Trp Lys Ile Met Leu Asn Lys
        115             120             125
Glu Lys Thr Tyr Leu Arg Asp Gln His Phe Leu Glu Gln His Pro Leu
    130             135             140
Leu Gln Pro Lys Met Arg Ala Ile Leu Leu Asp Trp Leu Met Glu Val
145             150             155             160
Cys Glu Val Tyr Lys Leu His Arg Glu Thr Phe Tyr Leu Ala Gln Asp
            165             170             175
Phe Phe Asp Arg Tyr Met Ala Thr Gln Glu Asn Val Val Lys Thr Leu
            180             185             190
Leu Gln Leu Ile Gly Ile Ser Ser Leu Phe Ile Ala Ala Lys Leu Glu
        195             200             205
Glu Ile Tyr Pro Pro Lys Leu His Gln Phe Ala Tyr Val Thr Asp Gly
    210             215             220
Ala Cys Ser Gly Asp Glu Ile Leu Thr Met Glu Leu Met Ile Met Lys
225             230             235             240
Ala Leu Lys Trp Arg Leu Ser Pro Leu Thr Ile Val Ser Trp Leu Asn
            245             250             255
Val Tyr Met Gln Val Ala Tyr Leu Asn Asp Leu His Glu Val Leu Leu
            260             265             270
Pro Gln Tyr Pro Gln Gln Ile Phe Ile Gln Ile Ala Glu Leu Leu Asp
        275             280             285
Leu Cys Val Leu Asp Val Asp Cys Leu Glu Phe Pro Tyr Gly Ile Leu
        290             295             300
Ala Ala Ser Ala Leu Tyr His Phe Ser Ser Ser Glu Leu Met Gln Lys
305             310             315             320
Val Ser Gly Tyr Gln Trp Cys Asp Ile Glu Asn Cys Val Lys Trp Met
            325             330             335
Val Pro Phe Ala Met Val Ile Arg Glu Thr Gly Ser Ser Lys Leu Lys
            340             345             350
His Phe Arg Gly Val Ala Asp Glu Asp Ala His Asn Ile Gln Thr His
        355             360             365
Arg Asp Ser Leu Asp Leu Leu Asp Lys Ala Arg Ala Lys Lys Ala Met
    370             375             380
Leu Ser Glu Gln Asn Arg Ala Ser Pro Leu Pro Ser Gly Leu Leu Thr
385             390             395             400
Pro Pro Gln Ser Gly Val Leu Gly Ser Val Val Pro Ser Gly Ala Gly
            405             410             415
Gly Cys Gly Gln Ala Leu Cys Arg Ala His Ser Gln Leu Gly Arg Gly
        420             425             430
Leu Thr Ser Pro His Tyr Gln Leu Thr Val Tyr Asn Ala Phe Asp Glu
        435             440             445
Leu Phe Xaa
    450
```

<210> 32
<211> 3750
<212> DNA
<213> Homo Sapien

<400> 32

```
gatctgtctg gctccattga tgacctcccc acgggaacgg aagcaacttt gagctcagca        60
gtcagtgcat ccgggtccac gagcagccaa ggggatcaga gcaacccggc gcagtcgcct       120
ttctccccac atgcgtcccc tcatctctcc agcatcccgg ggggcccatc tccctctcct       180
gttggctctc ctgtaggaag caaccagtct cgatctggcc caatctctcc tgcaagtatc       240
ccaggtttta tggcaggcac acaaagaaac cctcagatgg ctcagtatgg acctcaacag       300
acaggaccat ccatgtcgcc tcatccttct cctgggggcc agatgcatgc tggaatcagt       360
agctttcagc agagtaactc aagtggggact tacggtccac agatgagcca gtatggacca       420
caaggtaact actccagacc cccagcgtat agtggggtgc ccagtgcaag ctacagcggc       480
ccagggcccg gtatgggtat cagtgccaac aaccagatgc atggacaagg gccaagccag       540
ccatgtggtg ctgtgcccct gggacgaatg ccatcagctg ggatgcagaa cagaccattt       600
cctggaaata tgagcagcat gaccccagt tctcctggca tgtctcagca gggagggcca       660
ggaatggggc cgccaatgcc aactgtgaac cgtaaggcac aggaggcagc cgcagcagtg       720
atgcaggctg ctgcgaactc agcacaaagc aggtacgcca cccaggagca cgccccgggc       780
aggcaaggca gtttccccgg catgaaccag agtggactta tggcttccag ctctccctac       840
agccagccca tgaacaacag ctctagcctg atgaacacgc aggcgccgcc ctacagcatg       900
gcgcccgcca tggtgaacag ctcggcagca tctgtgggtc ttgcagatat gatgtctcct       960
ggtgaatcca aactgcccct gcctctcaaa gcagacggca agaagaagg cactccacag      1020
cccgagagca agtcaaagga tagctacagc tctcagggta tttctcagcc cccaacccca      1080
ggcaacctgc cagtcccttc cccaatgtcc cccagctctg ctagcatctc ctcatttcat      1140
ggagatgaaa gtgatagcat tagcagccca ggctggccaa agactccatc aagccctaag      1200
tccagctcct ccaccactac tggggagaag atcacgaagg tgtacgagct ggggaatgag      1260
ccagagagaa agctctgggt cgaccgatac ctcaccttca tggaagagag aggctctcct      1320
gtctcaagtc tgcctgccgt gggcaagaag cccctggacc tgttccgact ctacgtctgc      1380
gtcaaagaga tcgggggttt ggcccaggtt aataaaaaca agaagtggcg tgagctggca      1440
accaacctaa acgttggcac ctcaagcagt gcagcgagct ccatgaaaaa gcagtatatt      1500
cagtacctgt ttgcctttga gagcaagatc gaacctaact cgggatcctt gcaaggccca      1560
cagacccccc agtcaactgg cagcaattcc atggcagagg ttccaggtga cctgaagcca      1620
cctaccccag cctccacccc tcacggccag atgactccaa tgcaaggtgg aagaagcagt      1680
acaatcagtg tgcacgaccc attctcagat gtgagtgatt catccttccc gaaacggaac      1740
tccatgactc caaacgcccc ctaccagcag ggcatgagca tgcccgatgt gatgggcagg      1800
atgccctatg agcccaacaa ggacccctt gggggaatga gaaaagtgcc tggaagcagc      1860
gagccctta tgacgcaagg acagatgccc aacagcagca tgcaggacat gtacaaccaa      1920
agtccctccg gagcaatgtc taacctgggc atggggcagc gccagcagtt ccctatgga      1980
gccagttacg accgaagcac tgttgctact ttcaatctct cccagttgtc tggatttctc      2040
gaactttttag tcgagtactt tagaaaatgc ctgattgaca ttttttggaat tcttatggaa      2100
tatgaagtgg gagaccccag ccaaaaagca cttgatcaca acgcagcaag gaaggatgac      2160
agccagtcct ggcagacga ttctgggaaa gaggaggaag atgctgaatg tattgatgac      2220
gacgaggaag acgaggagga tgaggaggaa gacagcgaga agacagaaag cgatgaaaag      2280
agcagcatcg ctctgactgc cccggacgcc gctgcagacc caaaggagaa gcccaagcaa      2340
gccagtaagt tcgacaagct gccaataaag atagtcaaaa agaacaacct gtttgttgtt      2400
gaccgatctg acaagttggg gcgtgtgcag gagttcaata gtggccttct gcactggcag      2460
ctcggcgggg gtgacaccac cgagcacatt cagactcact ttgagagcaa gatggaaatt      2520
cctcctcgca ggcgcccacc tcccccctta agctccgcag gtagaaagaa agagcaagaa      2580
ggcaaaggcg actctgaaga gcagcaagag aaaagcatca tagcaaccat cgatgacgtc      2640
ctctctgctc ggccaggggc attgcctgaa gacgcaaacc tgggccccca gaccgaaagc      2700
agtaagtttc cctttggtat ccagcaagcc aaaaagtcacc ggaacatcaa gctgctggag      2760
gacgagccca ggagccgaga cgagactcct ctgtgtacca tcgcgcactg gcaggactcg      2820
ctggctaagc gatgcatctg tgtgtccaat attgtccgta gcttgtcatt cgtgcctggc      2880
aatgatgccg aaatgtccaa acatccaggc ctggtgctga tcctggggaa gctgattctt      2940
```

- 28 -

```
cttcaccacg agcatccaga gagaaagcga gcaccgcaga cctatgagaa agaggaggat    3000
gaggacaagg gggtggcctg cagcaaagat gagtggtggt gggactgcct cgaggtcttg    3060
agggataaca cgttggtcac gttggccaac atttccgggc agctagactt gtctgcttac    3120
acggaaagca tctgcttgcc aattttggat ggcttgctgc actggatggt gtgcccgtct    3180
gcagaggcac aagatccctt tccaactgtg ggacccaact cggtcctgtc gcctcagaga    3240
cttgtgctgg agaccctctg taaactcagt atccaggaca ataatgtgga cctgatcttg    3300
gccactcctc catttagtcg tcaggagaaa ttctatgcta cattagttag gtacgttggg    3360
gatcgcaaaa acccagtctg tcgagaaatg tccatggcgc ttttatcgaa ccttgcccaa    3420
ggggacgcac tagcagcaag ggccatagct gtgcagaaag aagcattgg aaacttgata     3480
agcttcctag aggatggggt cacgatggcc cagtaccagc agagccagca caacctcatg    3540
cacatgcagc ccccgccccт ggaaccacct agcgtagaca tgatgtgcag ggcggccaag    3600
gctttgctag ccatggccag agtggacgaa aaccgctcgg aattcctttt gcacgagggc    3660
cggttgctgg atatctcgat atcagctgtc ctgaactctc tggttgcatc tgtcatctgt    3720
gatgtactgt ttcagattgg gcagttatga                                     3750
```

<210> 33
<211> 1249
<212> PRT
<213> Homo Sapien

<400> 33
```
Asp Leu Ser Gly Ser Ile Asp Asp Leu Pro Thr Gly Thr Glu Ala Thr
 1               5                  10                  15
Leu Ser Ser Ala Val Ser Ala Ser Gly Ser Thr Ser Ser Gln Gly Asp
             20                  25                  30
Gln Ser Asn Pro Ala Gln Ser Pro Phe Ser Pro His Ala Ser Pro His
         35                  40                  45
Leu Ser Ser Ile Pro Gly Gly Pro Ser Pro Ser Pro Val Gly Ser Pro
     50                  55                  60
Val Gly Ser Asn Gln Ser Arg Ser Gly Pro Ile Ser Pro Ala Ser Ile
65                  70                  75                  80
Pro Gly Phe Met Ala Gly Thr Gln Arg Asn Pro Gln Met Ala Gln Tyr
                 85                  90                  95
Gly Pro Gln Gln Thr Gly Pro Ser Met Ser Pro His Pro Ser Pro Gly
            100                 105                 110
Gly Gln Met His Ala Gly Ile Ser Ser Phe Gln Gln Ser Asn Ser Ser
            115                 120                 125
Gly Thr Tyr Gly Pro Gln Met Ser Gln Tyr Gly Pro Gln Gly Asn Tyr
        130                 135                 140
Ser Arg Pro Pro Ala Tyr Ser Gly Val Pro Ser Ala Ser Tyr Ser Gly
145                 150                 155                 160
Pro Gly Pro Gly Met Gly Ile Ser Ala Asn Asn Gln Met His Gly Gln
                165                 170                 175
Gly Pro Ser Gln Pro Cys Gly Ala Val Pro Leu Gly Arg Met Pro Ser
            180                 185                 190
Ala Gly Met Gln Asn Arg Pro Phe Pro Gly Asn Met Ser Ser Met Thr
            195                 200                 205
Pro Ser Ser Pro Gly Met Ser Gln Gln Gly Gly Pro Gly Met Gly Pro
        210                 215                 220
Pro Met Pro Thr Val Asn Arg Lys Ala Gln Glu Ala Ala Ala Ala Val
225                 230                 235                 240
Met Gln Ala Ala Ala Asn Ser Ala Gln Ser Arg Tyr Ala Thr Gln Glu
                245                 250                 255
His Ala Pro Gly Arg Gln Gly Ser Phe Pro Gly Met Asn Gln Ser Gly
            260                 265                 270
```

```
Leu Met Ala Ser Ser Ser Pro Tyr Ser Gln Pro Met Asn Asn Ser Ser
        275                 280                 285
Ser Leu Met Asn Thr Gln Ala Pro Pro Tyr Ser Met Ala Pro Ala Met
        290                 295                 300
Val Asn Ser Ser Ala Ala Ser Val Gly Leu Ala Asp Met Met Ser Pro
305                 310                 315                 320
Gly Glu Ser Lys Leu Pro Leu Pro Leu Lys Ala Asp Gly Lys Glu Glu
                325                 330                 335
Gly Thr Pro Gln Pro Glu Ser Lys Ser Lys Asp Ser Tyr Ser Ser Gln
                340                 345                 350
Gly Ile Ser Gln Pro Pro Thr Pro Gly Asn Leu Pro Val Pro Ser Pro
        355                 360                 365
Met Ser Pro Ser Ser Ala Ser Ile Ser Ser Phe His Gly Asp Glu Ser
        370                 375                 380
Asp Ser Ile Ser Ser Pro Gly Trp Pro Lys Thr Pro Ser Ser Pro Lys
385                 390                 395                 400
Ser Ser Ser Ser Thr Thr Thr Gly Glu Lys Ile Thr Lys Val Tyr Glu
                405                 410                 415
Leu Gly Asn Glu Pro Glu Arg Lys Leu Trp Val Asp Arg Tyr Leu Thr
        420                 425                 430
Phe Met Glu Glu Arg Gly Ser Pro Val Ser Ser Leu Pro Ala Val Gly
        435                 440                 445
Lys Lys Pro Leu Asp Leu Phe Arg Leu Tyr Val Cys Val Lys Glu Ile
        450                 455                 460
Gly Gly Leu Ala Gln Val Asn Lys Asn Lys Lys Trp Arg Glu Leu Ala
465                 470                 475                 480
Thr Asn Leu Asn Val Gly Thr Ser Ser Ser Ala Ala Ser Ser Met Lys
                485                 490                 495
Lys Gln Tyr Ile Gln Tyr Leu Phe Ala Phe Glu Ser Lys Ile Glu Pro
                500                 505                 510
Asn Ser Gly Ser Leu Gln Gly Pro Gln Thr Pro Gln Ser Thr Gly Ser
        515                 520                 525
Asn Ser Met Ala Glu Val Pro Gly Asp Leu Lys Pro Pro Thr Pro Ala
        530                 535                 540
Ser Thr Pro His Gly Gln Met Thr Pro Met Gln Gly Gly Arg Ser Ser
545                 550                 555                 560
Thr Ile Ser Val His Asp Pro Phe Ser Asp Val Ser Asp Ser Ser Phe
                565                 570                 575
Pro Lys Arg Asn Ser Met Thr Pro Asn Ala Pro Tyr Gln Gln Gly Met
                580                 585                 590
Ser Met Pro Asp Val Met Gly Arg Met Pro Tyr Glu Pro Asn Lys Asp
        595                 600                 605
Pro Phe Gly Gly Met Arg Lys Val Pro Gly Ser Ser Glu Pro Phe Met
        610                 615                 620
Thr Gln Gly Gln Met Pro Asn Ser Ser Met Gln Asp Met Tyr Asn Gln
625                 630                 635                 640
Ser Pro Ser Gly Ala Met Ser Asn Leu Gly Met Gly Gln Arg Gln Gln
                645                 650                 655
Phe Pro Tyr Gly Ala Ser Tyr Asp Arg Ser Thr Val Ala Thr Phe Asn
        660                 665                 670
Leu Ser Gln Leu Ser Gly Phe Leu Glu Leu Leu Val Glu Tyr Phe Arg
        675                 680                 685
Lys Cys Leu Ile Asp Ile Phe Gly Ile Leu Met Glu Tyr Glu Val Gly
        690                 695                 700
Asp Pro Ser Gln Lys Ala Leu Asp His Asn Ala Ala Arg Lys Asp Asp
```

Ser Gln Ser Leu Ala Asp Asp Ser Gly Lys Glu Glu Glu Asp Ala Glu
                    725   730   735
Cys Ile Asp Asp Asp Glu Glu Asp Glu Glu Asp Glu Glu Glu Asp Ser
                    740   745   750
Glu Lys Thr Glu Ser Asp Glu Lys Ser Ser Ile Ala Leu Thr Ala Pro
                    755   760   765
Asp Ala Ala Ala Asp Pro Lys Glu Lys Pro Lys Gln Ala Ser Lys Phe
          770   775   780
Asp Lys Leu Pro Ile Lys Ile Val Lys Lys Asn Asn Leu Phe Val Val
785   790   795   800
Asp Arg Ser Asp Lys Leu Gly Arg Val Gln Glu Phe Asn Ser Gly Leu
                    805   810   815
Leu His Trp Gln Leu Gly Gly Gly Asp Thr Thr Glu His Ile Gln Thr
                    820   825   830
His Phe Glu Ser Lys Met Glu Ile Pro Pro Arg Arg Arg Pro Pro Pro
                    835   840   845
Pro Leu Ser Ser Ala Gly Arg Lys Lys Glu Gln Glu Gly Lys Gly Asp
          850   855   860
Ser Glu Glu Gln Gln Glu Lys Ser Ile Ile Ala Thr Ile Asp Asp Val
865   870   875   880
Leu Ser Ala Arg Pro Gly Ala Leu Pro Glu Asp Ala Asn Pro Gly Pro
                    885   890   895
Gln Thr Glu Ser Ser Lys Phe Pro Phe Gly Ile Gln Gln Ala Lys Ser
                    900   905   910
His Arg Asn Ile Lys Leu Leu Glu Asp Glu Pro Arg Ser Arg Asp Glu
          915   920   925
Thr Pro Leu Cys Thr Ile Ala His Trp Gln Asp Ser Leu Ala Lys Arg
          930   935   940
Cys Ile Cys Val Ser Asn Ile Val Arg Ser Leu Ser Phe Val Pro Gly
945   950   955   960
Asn Asp Ala Glu Met Ser Lys His Pro Gly Leu Val Leu Ile Leu Gly
                    965   970   975
Lys Leu Ile Leu Leu His His Glu His Pro Glu Arg Lys Arg Ala Pro
          980   985   990
Gln Thr Tyr Glu Lys Glu Glu Asp Glu Asp Lys Gly Val Ala Cys Ser
          995   1000   1005
Lys Asp Glu Trp Trp Trp Asp Cys Leu Glu Val Leu Arg Asp Asn Thr
     1010   1015   1020
Leu Val Thr Leu Ala Asn Ile Ser Gly Gln Leu Asp Leu Ser Ala Tyr
1025   1030   1035   1040
Thr Glu Ser Ile Cys Leu Pro Ile Leu Asp Gly Leu Leu His Trp Met
                    1045   1050   1055
Val Cys Pro Ser Ala Glu Ala Gln Asp Pro Phe Pro Thr Val Gly Pro
                    1060   1065   1070
Asn Ser Val Leu Ser Pro Gln Arg Leu Val Leu Glu Thr Leu Cys Lys
          1075   1080   1085
Leu Ser Ile Gln Asp Asn Asn Val Asp Leu Ile Leu Ala Thr Pro Pro
          1090   1095   1100
Phe Ser Arg Gln Glu Lys Phe Tyr Ala Thr Leu Val Arg Tyr Val Gly
1105   1110   1115   1120
Asp Arg Lys Asn Pro Val Cys Arg Glu Met Ser Met Ala Leu Leu Ser
                    1125   1130   1135
Asn Leu Ala Gln Gly Asp Ala Leu Ala Ala Arg Ala Ile Ala Val Gln
                    1140   1145   1150

```
Lys Gly Ser Ile Gly Asn Leu Ile Ser Phe Leu Glu Asp Gly Val Thr
        1155                1160                1165
Met Ala Gln Tyr Gln Gln Ser Gln His Asn Leu Met His Met Gln Pro
      1170                1175                1180
Pro Pro Leu Glu Pro Pro Ser Val Asp Met Met Cys Arg Ala Ala Lys
1185                1190                1195                1200
Ala Leu Leu Ala Met Ala Arg Val Asp Glu Asn Arg Ser Glu Phe Leu
                1205                1210                1215
Leu His Glu Gly Arg Leu Leu Asp Ile Ser Ile Ser Ala Val Leu Asn
            1220                1225                1230
Ser Leu Val Ala Ser Val Ile Cys Asp Val Leu Phe Gln Ile Gly Gln
        1235                1240                1245
Leu
```

<210> 34
<211> 2887
<212> DNA
<213> Homo Sapien

<400> 34
```
taactgagcg aggagcaatt gattaatagc tcggcgaggg gactcactga ctgttataat    60
aacactacac cagcaactcc tggcttccca gcagccggaa cacagacagg agagagtcag   120
tggcaaatag acattttttct tatttcttaa aaaacagcaa cttgtttgct actttttattt   180
ctgttgattt tttttttcttg gtgtgtgtgg tggttgtttt taagtgtgga gggcaaaagg   240
agataccatc ccaggctcag tccaacccct ctccaaaacg gcttttctga cactccaggt   300
agcgagggag ttgggtctcc aggttgtgcg aggagcaaat gatgaccgcc aaggccgtag   360
acaaaatccc agtaactctc agtggttttg tgcaccagct gtctgacaac atctacccgg   420
tggaggacct cgccgccacg tcggtgacca tctttcccaa tgccgaactg ggaggcccct   480
ttgaccagat gaacggagtg gccggagatg gcatgatcaa cattgacatg actggagaga   540
agaggtcgtt ggatctccca tatcccagca gctttgctcc cgtctctgca cctagaaacc   600
agaccttcac ttacatgggc aagttctcca ttgaccctca gtaccctggt gccagctgct   660
acccagaagg cataatcaat attgtgagtg caggcatctt gcaagggtc acttccccag   720
cttcaaccac agcctcatcc agcgtcacct ctgcctcccc caacccactg gccacaggac   780
ccctgggtgt gtgcaccatg tcccagaccc agcctgacct ggaccacctg tactctccgc   840
caccgcctcc tcctccttat tctggctgtg caggagacct ctaccaggac ccttctgcgt   900
tcctgtcagc agccaccacc tccacctctt cctctctggc ctacccacca cctccttcct   960
atccatcccc caagccagcc acggacccag gtctcttccc aatgatccca gactatcctg  1020
gattctttcc atctcagtgc cagagagacc tacatggtac agctggccca gaccgtaagc  1080
cctttccctg cccactggac accctgcggg tgccccctcc actcactcca ctctctacaa  1140
tccgtaactt taccctgggg ggccccagtg ctggggtgac cggaccaggg gccagtggag  1200
gcagcgaggg accccggctg cctggtagca gctcagcagc agcagcagcc gccgccgccg  1260
ccgcctataa cccacaccac ctgccactgc ggcccattct gaggcctcgc aagtacccca  1320
acagacccag caagacgccg gtgcacgaga ggccctaccc gtgcccagca gaaggctgcg  1380
accggcggtt ctcccgctct gacgagctga cacggcacat ccgaatccac actgggcata  1440
agcccttcca gtgtcggatc tgcatgcgca acttcagccg cagtgaccac ctcaccaccc  1500
atatccgcac ccacaccggt gagaagccct cgcctgtga ctactgtggc cgaaagtttg  1560
cccggagtga tgagaggaag cgccacacca agatccacct gagacagaaa gagcggaaaa  1620
gcagtgcccc ctctgcatcg gtgccagccc cctctacagc ctcctgctct gggggcgtgc  1680
agcctggggg taccctgtgc agcagtaaca gcagcagtct ggcggaggg ccgctcgccc  1740
cttgctcctc tcggacccgg acaccttgag atgagactca ggctgataca ccagctccca  1800
aaggtcccgg aggcccttg tccactggag ctgcacaaca aacactacca ccctttcctg  1860
tccctctctc cctttgttgg gcaaagggct ttggtggagc tagcactgcc ccctttccac  1920
ctagaagcag gttcttccta aaacttagcc cattctagtc tctcttaggt gagttgacta  1980
tcaacccaag gcaaagggga ggctcagaag gaggtggtgt ggggacccct ggccaagagg  2040
```
```
- 32 -
```

```
gctgaggtct gaccctgctt taaagggttg tttgactagg ttttgctacc ccacttcccc    2100
ttattttgac ccatcacagg ttttgacccc tggatgtcag agttgatcta agacgttttc    2160
tacaataggt tgggagatgc tgatcccttc aagtggggac agcaaaaaga caagcaaaac    2220
tgatgtgcac tttatggctt gggactgatt tgggggacat tgtacagtga gtgaagtata    2280
gcctttatgc cacactctgt ggccctaaaa tggtgaatca gagcatatct agttgtctca    2340
acccttgaag caatatgtat tataaactca gagaacagaa gtgcaatgtg atgggaggaa    2400
catagcaata tctgctcctt ttcgagttgt ttgagaaatg taggctattt ttttcagtgta  2460
tatccactca gattttgtgt attttttgatg tacactgttc tctaaattct gaatctttgg   2520
gaaaaaatgt aaagcattta tgatctcaga ggttaactta tttaaggggg atgtacatat    2580
attctctgaa actaggatgc atgcaattgt gttggaagtg tccttggtgc cttgtgtgat    2640
gtagacaatg ttacaaggtc tgcatgtaaa tgggttgcct tattatggag aaaaaaatca    2700
ctccctgagt ttagtatggc tgtatatttc tgcctattaa tatttggaat ttttttttaga   2760
aagtatattt ttgtatgctt tgttttgtga cttaaaagtg ttacctttgt agtcaaattt    2820
cagataagaa tgtacataat gttaccggag ctgatttgtt tggtcattag ctcttaatag    2880
ttgtgaa                                                              2887
```

<210> 35
<211> 488
<212> PRT
<213> Homo Sapien

<400> 35

```
Arg Gly Ser Trp Val Ser Arg Leu Cys Glu Glu Gln Met Met Thr Ala
 1               5                  10                  15
Lys Ala Val Asp Lys Ile Pro Val Thr Leu Ser Gly Phe Val His Gln
            20                  25                  30
Leu Ser Asp Asn Ile Tyr Pro Val Glu Asp Leu Ala Ala Thr Ser Val
            35                  40                  45
Thr Ile Phe Pro Asn Ala Glu Leu Gly Gly Pro Phe Asp Gln Met Asn
        50                  55                  60
Gly Val Ala Gly Asp Gly Met Ile Asn Ile Asp Met Thr Gly Glu Lys
65                  70                  75                  80
Arg Ser Leu Asp Leu Pro Tyr Pro Ser Ser Phe Ala Pro Val Ser Ala
                85                  90                  95
Pro Arg Asn Gln Thr Phe Thr Tyr Met Gly Lys Phe Ser Ile Asp Pro
                100                 105                 110
Gln Tyr Pro Gly Ala Ser Cys Tyr Pro Glu Gly Ile Ile Asn Ile Val
            115                 120                 125
Ser Ala Gly Ile Leu Gln Gly Val Thr Ser Pro Ala Ser Thr Thr Ala
    130                 135                 140
Ser Ser Ser Val Thr Ser Ala Ser Pro Asn Pro Leu Ala Thr Gly Pro
145                 150                 155                 160
Leu Gly Val Cys Thr Met Ser Gln Thr Gln Pro Asp Leu Asp His Leu
                165                 170                 175
Tyr Ser Pro Pro Pro Pro Pro Pro Tyr Ser Gly Cys Ala Gly Asp
            180                 185                 190
Leu Tyr Gln Asp Pro Ser Ala Phe Leu Ser Ala Ala Thr Thr Ser Thr
        195                 200                 205
Ser Ser Ser Leu Ala Tyr Pro Pro Pro Ser Tyr Pro Ser Pro Lys
    210                 215                 220
Pro Ala Thr Asp Pro Gly Leu Phe Pro Met Ile Pro Asp Tyr Pro Gly
225                 230                 235                 240
Phe Phe Pro Ser Gln Cys Gln Arg Asp Leu His Gly Thr Ala Gly Pro
                245                 250                 255
Asp Arg Lys Pro Phe Pro Cys Pro Leu Asp Thr Leu Arg Val Pro Pro
```

- 33 -

```
                260                       265                      270
Pro Leu Thr Pro Leu Ser Thr Ile Arg Asn Phe Thr Leu Gly Gly Pro
         275                   280                   285
Ser Ala Gly Val Thr Gly Pro Gly Ala Ser Gly Gly Ser Glu Gly Pro
    290                   295                   300
Arg Leu Pro Gly Ser Ser Ser Ala Ala Ala Ala Ala Ala Ala Ala Ala
305                   310                   315                   320
Ala Tyr Asn Pro His His Leu Pro Leu Arg Pro Ile Leu Arg Pro Arg
                 325                   330                   335
Lys Tyr Pro Asn Arg Pro Ser Lys Thr Pro Val His Glu Arg Pro Tyr
             340                   345                   350
Pro Cys Pro Ala Glu Gly Cys Asp Arg Arg Phe Ser Arg Ser Asp Glu
         355                   360                   365
Leu Thr Arg His Ile Arg Ile His Thr Gly His Lys Pro Phe Gln Cys
    370                   375                   380
Arg Ile Cys Met Arg Asn Phe Ser Arg Ser Asp His Leu Thr Thr His
385                   390                   395                   400
Ile Arg Thr His Thr Gly Glu Lys Pro Phe Ala Cys Asp Tyr Cys Gly
                 405                   410                   415
Arg Lys Phe Ala Arg Ser Asp Glu Arg Lys Arg His Thr Lys Ile His
             420                   425                   430
Leu Arg Gln Lys Glu Arg Lys Ser Ser Ala Pro Ser Ala Ser Val Pro
         435                   440                   445
Ala Pro Ser Thr Ala Ser Cys Ser Gly Gly Val Gln Pro Gly Gly Thr
     450                   455                   460
Leu Cys Ser Ser Asn Ser Ser Ser Leu Gly Gly Gly Pro Leu Ala Pro
465                   470                   475                   480
Cys Ser Ser Arg Thr Arg Thr Pro
                 485
```

```
<210> 36
<211> 300
<212> DNA
<213> Homo Sapien
```

```
<400> 36
attaagatgt tctacgagga gcatttgcac ttggacgatg agatccgcta catcctggat    60
ggcagtgggt acttcgatgt gagggacaag gaggaccagt ggatccggat cttcatggag   120
aagggagaca tggtgacgct ccccgcgggg atctatcacc gcttcacggt ggacgagaag   180
aactacacga aggccatgcg gctgtttgtg ggagaaccgg tgtggacagc gtacaaccgg   240
cccgctgacc attttgaagc ccgcgggcag tacgtgaaat tctggcacga gaccgcctag   300
```

```
<210> 37
<211> 99
<212> PRT
<213> Homo Sapien
```

```
<400> 37
Ile Lys Met Phe Tyr Glu Glu His Leu His Leu Asp Asp Glu Ile Arg
 1               5                   10                  15
Tyr Ile Leu Asp Gly Ser Gly Tyr Phe Asp Val Arg Asp Lys Glu Asp
         20                  25                  30
Gln Trp Ile Arg Ile Phe Met Glu Lys Gly Asp Met Val Thr Leu Pro
     35                  40                  45
Ala Gly Ile Tyr His Arg Phe Thr Val Asp Glu Lys Asn Tyr Thr Lys
```

```
             50                    55                    60
Ala Met Arg Leu Phe Val Gly Glu Pro Val Trp Thr Ala Tyr Asn Arg
 65                    70                    75                    80
Pro Ala Asp His Phe Glu Ala Arg Gly Gln Tyr Val Lys Phe Leu Ala
                    85                    90                    95
Gln Thr Ala


<210> 38
<211> 2404
<212> DNA
<213> Homo Sapien


<400> 38
gaaaaggtgg acaagtccta tttttcaagag aagatgactt ttaacagttt tgaaggatct     60
aaaacttgtg tacctgcaga catcaataag gaagaagaat ttgtagaaga gtttaataga    120
ttaaaaactt ttgctaattt tccaagtggt agtcctgttt cagcatcaac actggcacga    180
gcagggtttc tttatactgg tgaaggagat accgtgcggt gctttagttg tcatgcagct    240
gtagatagat ggcaatatgg agactcagca gttggaagac acaggaaagt atccccaaat    300
tgcagattta tcaacggctt ttatcttgaa aatagtgcca cgcagtctac aaattctggt    360
atccagaatg gtcagtacaa agttgaaaac tatctgggaa gcagagatca ttttgcctta    420
gacaggccat ctgagacaca tgcagactat cttttgagaa ctgggcaggt tgtagatata    480
tcagacacca tatacccgag gaaccctgcc atgtatagtg aagaagctag attaaagtcc    540
tttcagaact ggccagacta tgctcaccta accccaagag agttagcaag tgctggactc    600
tactacacag gtattggtga ccaagtgcag tgcttttgtt gtggtggaaa actgaaaaat    660
tgggaacctt gtgatcgtgc ctggtcagta acacaggcga cactttccta attgcttctt    720
tgttttgggc cggaatctta atattcgaag tgaatctgat gctgtgagtt ctgataggaa    780
tttcccaaat tcaacaaatc ttccaagaaa tccatccatg cagattatg aagcacggat     840
ctttactttt gggacatgga tatactcagt taacaaggag cagcttgcaa gagctggatt    900
ttatgcttta ggtgaaggtg ataaagtaaa gtgctttcac tgtggaggag ggctaactga    960
ttggaagccc agtgaagacc cttgggaaca acatgctaaa tggtatccag ggtgcaaata   1020
tctgttagaa cagaagggac aagaatatat aaacaatatt catttaactc attcacttga   1080
ggagtgtctg gtaagaacta ctgagaaaac accatcacta actagaagaa ttgatgatac   1140
catcttccaa aatcctatgg tacaagaagc tatacgaatg gggttcagtt tcaaggacat   1200
taagaaaata atggaggaaa aaattcagat atctgggagc aactataaat cacttgaggt   1260
tctggttgca gatctagtga atgctcagaa agacagtatg caagatgagt caagtcagac   1320
ttcattacag aaagagatta gtactgaaga gcagctaagg cgcctgcaag aggagaagct   1380
ttgcaaaatc tgtatggata gaaatattgc tatcgttttt gttccttgtg gacatctagt   1440
cacttgtaaa caatgtgctg aagcagttga caagtgtccc atgtgctaca cagtcattac   1500
tttcaagcaa aaaatttta tgtcttaatc taactctata gtaggcatgt tatgttgttc    1560
ttattaccct gattgaatgt gtgatgtgaa ctgactttaa gtaatcagga ttgaattcca   1620
ttagcatttg ctaccaagta ggaaaaaaaa tgtacatggc agtgtttttag ttggcaatat   1680
aatctttgaa tttcttgatt tttcagggta ttagctgtat tatccatttt ttttactggt   1740
atttaattga aaccatagac taagaataag aagcatcata ctataactga acacaatgtg   1800
tattcatagt atactgattt aatttctaag tgtaagtgaa ttaatcatct ggattttttа   1860
ttctttttcag ataggcttaa caaatggagc tttctgtata taaatgtgga gattagagtt   1920
aatctcccca atcacataat ttgttttgtg tgaaaaggaa taaattgttc catgctggtg   1980
gaaagataga gattgttttt agaggttggt tgttgtgttt taggattctg tccattttct   2040
tttaaagtta taaacacgta cttgtgcgaa ttatttttt aaagtgattt gccattttttg   2100
aaagcgtatt taatgataga atactatcga gccaacatgt actgacatgg aaagatgtca   2160
aagatatgtt aagtgtaaaa tgcaagtggc aaaacactat gtatagtctg agccagatca   2220
aagtatgtat gttttaata tgcatagaac aaaagatttg gaaagatata caccaaactg    2280
ttaaatgtgg tttctcttcg gggaggggg gattggggg aggggcccca gaggggtttt    2340
ataggggcct tttcactttc tactttttc attttgttct gttcgaattt tttataagta   2400
tgta                                                                2404
```

<210> 39
<211> 278
<212> PRT
<213> Homo Sapien

<400> 39
```
His Arg Arg His Phe Pro Asn Cys Phe Phe Val Leu Gly Arg Asn Leu
 1               5                  10                  15
Asn Ile Arg Ser Glu Ser Asp Ala Val Ser Ser Asp Arg Asn Phe Pro
            20                  25                  30
Asn Ser Thr Asn Leu Pro Arg Asn Pro Ser Met Ala Asp Tyr Glu Ala
            35                  40                  45
Arg Ile Phe Thr Phe Gly Thr Trp Ile Tyr Ser Val Asn Lys Glu Gln
    50                  55                  60
Leu Ala Arg Ala Gly Phe Tyr Ala Leu Gly Glu Gly Asp Lys Val Lys
65                  70                  75                  80
Cys Phe His Cys Gly Gly Gly Leu Thr Asp Trp Lys Pro Ser Glu Asp
                85                  90                  95
Pro Trp Glu Gln His Ala Lys Trp Tyr Pro Gly Cys Lys Tyr Leu Leu
            100                 105                 110
Glu Gln Lys Gly Gln Glu Tyr Ile Asn Asn Ile His Leu Thr His Ser
            115                 120                 125
Leu Glu Glu Cys Leu Val Arg Thr Thr Glu Lys Thr Pro Ser Leu Thr
    130                 135                 140
Arg Arg Ile Asp Asp Thr Ile Phe Gln Asn Pro Met Val Gln Glu Ala
145                 150                 155                 160
Ile Arg Met Gly Phe Ser Phe Lys Asp Ile Lys Lys Ile Met Glu Glu
                165                 170                 175
Lys Ile Gln Ile Ser Gly Ser Asn Tyr Lys Ser Leu Glu Val Leu Val
                180                 185                 190
Ala Asp Leu Val Asn Ala Gln Lys Asp Ser Met Gln Asp Glu Ser Ser
            195                 200                 205
Gln Thr Ser Leu Gln Lys Glu Ile Ser Thr Glu Glu Gln Leu Arg Arg
    210                 215                 220
Leu Gln Glu Glu Lys Leu Cys Lys Ile Cys Met Asp Arg Asn Ile Ala
225                 230                 235                 240
Ile Val Phe Val Pro Cys Gly His Leu Val Thr Cys Lys Gln Cys Ala
                245                 250                 255
Glu Ala Val Asp Lys Cys Pro Met Cys Tyr Thr Val Ile Thr Phe Lys
                260                 265                 270
Gln Lys Ile Phe Met Ser
            275
```

<210> 40
<211> 2409
<212> DNA
<213> Homo Sapien

<400> 40
```
atgtcgggtc gccgctgcgc cggcggggga gcggcctgcg cgagcgccgc ggccgaggcc    60
gtggagccgg ccgcccgaga gctgttcgag gcgtgccgca acggggacgt ggaacgagtc   120
aagaggctgg tgacgcctga aaggtgaac agccgcgaca cggcgggcag gaaatccacc   180
ccgctgcact tcgccgcagg ttttgggcgg aaagacgtag ttgaatattt gcttcagaat   240
ggtgcaaatg tccaagcacg tgatgatggg ggccttattc ctcttcataa tgcatgctct   300
```

- 36 -

```
tttggtcatg ctgaagtagt caatctcctt ttgcgacatg gtgcagaccc caatgctcga     360
gataattgga attatactcc tctccatgaa gctgcaatta aaggaaagat tgatgtttgc     420
attgtgctgt tacagcatgg agctgagcca accatccgaa atacagatgg aaggacagca     480
ttggatttag cagatccatc tgccaaagca gtgcttactg gtaagtctgt atactctggt     540
tattccagga agcctgtaaa gaacaacctt gccaggagtg gcaatgaaga aaaaatgatg     600
gctctactca caccattaaa tgtcaactgc acgcaagtg atggcagaaa gcatggtgcc     660
tgtgtaaatg caatggactt gtggcaattc actcctcttc atgaggcagc ttctaagaac     720
agggttgaag tatgttctct tctcttaagt tatggtgcag acccaacact gctcaattgt     780
cacaataaaa gtgctataga cttggctccc acaccacagt taaaagaaag attagcatat     840
gaatttaaag gccactcgtt gctgcaagct gcacgagaag ctgatgttac tcgaatcaaa     900
aaacatctct ctctggaaat ggtgaatttc aagcatcctc aaacacatga aacagcattg     960
aaactgtgta ctgttcagag tgtcaactgc agagacattg aagggcgtca gtctacacca    1020
cttcattttg cagctgggta taacagagtg tccgtggtgg aatatctgct acagcatgga    1080
gctgatgtgc atgctaaaga taaaggaggc cttgtacctt tgcacaatgc atgttcttat    1140
ggacattatg aagttgcaga acttcttgtt aaacatggag cagtagttaa tgtagctgat    1200
ttatggaaat ttacaccttt acatgaagca gcagcaaaag gaaaatatga aatttgcaaa    1260
cttctgctcc agcatggtgc agaccctaca aaaaaaaaca gggatggaaa tactcctttg    1320
gatcttgtta aagatggaga tacagatatt caagatctgc ttaggggaga tgcagctttg    1380
ctagatgctg ccaagaaggg ttgtttagcc agagtgaaga agttgtcttc cctgataat     1440
gtaaattgcc gcgatacccc aggcagacat tcaacacctt acatttagc agctggttat     1500
aataatttag aagttgcaga gtatttgtta caacacggag ctgatgtgaa tgcccaagac    1560
aaaggaggac ttattccttt acataatgca gcatcttacg ggatcacttt ggatgtatta    1620
gttgagatgg ggcacaagga gctgaaggag attggaatca atgcttatgg acataggcac    1680
aaactaatta aaggagtcga gagacttatc tccggacaac aaggtcttaa cccatattta    1740
actttgaaca cctctggtag tggaacaatt cttatagatc tgtctcctga tgataaagag    1800
tttcagtctg tggaggaaga gatgcaaagt acagttcgag agcacagaga tggaggtcat    1860
gcaggtggaa tcttcaacag atacaatatt ctcaagattc agaaggtttg taacaagaaa    1920
ctatgggaaa gatacactca ccggagaaaa gaagtttctg aagaaaccaa caaccatgcc    1980
aatgaacgaa tgctatttca tgggtctcct tttgtgaatg caattatcca caaaggcttt    2040
gatgaaaggc atgcgtacat aggtggtatg tttggagctg gcatttattt tgctgaaaac    2100
tcttccaaaa gcaatcaata tgtatatgga attggaggag gtactgggtg tccagttcac    2160
aaagacagat cttgttacat ttgccacagg cagctgctct tttgccgggt aaccttggga    2220
aagtctttcc tgcagttcag tgcaatgaaa atggcacatt ctcctccagg tcatcactca    2280
gtcactggta ggcccagtgt aaatggccta gcattagctg aatatgttat ttacagagga    2340
gaacaggctt atcctgagta tttaattact taccagatta tgaggcctga aggtatggtc    2400
gatggataa                                                            2409
```

<210> 41
<211> 802
<212> PRT
<213> Homo Sapien

<400> 41
```
Met Ser Gly Arg Arg Cys Ala Gly Gly Ala Ala Cys Ala Ser Ala
1               5                   10                  15
Ala Ala Glu Ala Val Glu Pro Ala Ala Arg Glu Leu Phe Glu Ala Cys
            20                  25                  30
Arg Asn Gly Asp Val Glu Arg Val Lys Arg Leu Val Thr Pro Glu Lys
        35                  40                  45
Val Asn Ser Arg Asp Thr Ala Gly Arg Lys Ser Thr Pro Leu His Phe
    50                  55                  60
Ala Ala Gly Phe Gly Arg Lys Asp Val Val Glu Tyr Leu Leu Gln Asn
65                  70                  75                  80
Gly Ala Asn Val Gln Ala Arg Asp Asp Gly Gly Leu Ile Pro Leu His
                85                  90                  95
```

```
Asn Ala Cys Ser Phe Gly His Ala Glu Val Val Asn Leu Leu Leu Arg
            100             105             110
His Gly Ala Asp Pro Asn Ala Arg Asp Asn Trp Asn Tyr Thr Pro Leu
        115             120             125
His Glu Ala Ala Ile Lys Gly Lys Ile Asp Val Cys Ile Val Leu Leu
        130             135             140
Gln His Gly Ala Glu Pro Thr Ile Arg Asn Thr Asp Gly Arg Thr Ala
145             150             155             160
Leu Asp Leu Ala Asp Pro Ser Ala Lys Ala Val Leu Thr Gly Lys Ser
                165             170             175
Val Tyr Ser Gly Tyr Ser Arg Lys Pro Val Lys Asn Asn Leu Ala Arg
            180             185             190
Ser Gly Asn Glu Glu Lys Met Met Ala Leu Leu Thr Pro Leu Asn Val
            195             200             205
Asn Cys His Ala Ser Asp Gly Arg Lys His Gly Ala Cys Val Asn Ala
    210             215             220
Met Asp Leu Trp Gln Phe Thr Pro Leu His Glu Ala Ala Ser Lys Asn
225             230             235             240
Arg Val Glu Val Cys Ser Leu Leu Leu Ser Tyr Gly Ala Asp Pro Thr
            245             250             255
Leu Leu Asn Cys His Asn Lys Ser Ala Ile Asp Leu Ala Pro Thr Pro
            260             265             270
Gln Leu Lys Glu Arg Leu Ala Tyr Glu Phe Lys Gly His Ser Leu Leu
    275             280             285
Gln Ala Ala Arg Glu Ala Asp Val Thr Arg Ile Lys Lys His Leu Ser
    290             295             300
Leu Glu Met Val Asn Phe Lys His Pro Gln Thr His Glu Thr Ala Leu
305             310             315             320
Lys Leu Cys Thr Val Gln Ser Val Asn Cys Arg Asp Ile Glu Gly Arg
            325             330             335
Gln Ser Thr Pro Leu His Phe Ala Ala Gly Tyr Asn Arg Val Ser Val
            340             345             350
Val Glu Tyr Leu Leu Gln His Gly Ala Asp Val His Ala Lys Asp Lys
    355             360             365
Gly Gly Leu Val Pro Leu His Asn Ala Cys Ser Tyr Gly His Tyr Glu
    370             375             380
Val Ala Glu Leu Leu Val Lys His Gly Ala Val Val Asn Val Ala Asp
385             390             395             400
Leu Trp Lys Phe Thr Pro Leu His Glu Ala Ala Ala Lys Gly Lys Tyr
            405             410             415
Glu Ile Cys Lys Leu Leu Leu Gln His Gly Ala Asp Pro Thr Lys Lys
            420             425             430
Asn Arg Asp Gly Asn Thr Pro Leu Asp Leu Val Lys Asp Gly Asp Thr
    435             440             445
Asp Ile Gln Asp Leu Leu Arg Gly Asp Ala Ala Leu Leu Asp Ala Ala
    450             455             460
Lys Lys Gly Cys Leu Ala Arg Val Lys Lys Leu Ser Ser Pro Asp Asn
465             470             475             480
Val Asn Cys Arg Asp Thr Gln Gly Arg His Ser Thr Pro Leu His Leu
            485             490             495
Ala Ala Gly Tyr Asn Asn Leu Glu Val Ala Glu Tyr Leu Leu Gln His
            500             505             510
Gly Ala Asp Val Asn Ala Gln Asp Lys Gly Gly Leu Ile Pro Leu His
            515             520             525
Asn Ala Ala Ser Tyr Gly Ile Thr Leu Asp Val Leu Val Glu Met Gly
```

```
              530                    535                     540
His Lys Glu Leu Lys Glu Ile Gly Ile Asn Ala Tyr Gly His Arg His
545                    550                     555                     560
Lys Leu Ile Lys Gly Val Glu Arg Leu Ile Ser Gly Gln Gln Gly Leu
                   565                     570                     575
Asn Pro Tyr Leu Thr Leu Asn Thr Ser Gly Ser Gly Thr Ile Leu Ile
                   580                     585                     590
Asp Leu Ser Pro Asp Asp Lys Glu Phe Gln Ser Val Glu Glu Glu Met
                   595                     600                     605
Gln Ser Thr Val Arg Glu His Arg Asp Gly Gly His Ala Gly Gly Ile
         610                     615                     620
Phe Asn Arg Tyr Asn Ile Leu Lys Ile Gln Lys Val Cys Asn Lys Lys
625                     630                     635                     640
Leu Trp Glu Arg Tyr Thr His Arg Arg Lys Glu Val Ser Glu Glu Asn
                   645                     650                     655
His Asn His Ala Asn Glu Arg Met Leu Phe His Gly Ser Pro Phe Val
                   660                     665                     670
Asn Ala Ile Ile His Lys Gly Phe Asp Glu Arg His Ala Tyr Ile Gly
         675                     680                     685
Gly Met Phe Gly Ala Gly Ile Tyr Phe Ala Glu Asn Ser Ser Lys Ser
         690                     695                     700
Asn Gln Tyr Val Tyr Gly Ile Gly Gly Gly Thr Gly Cys Pro Val His
705                     710                     715                     720
Lys Asp Arg Ser Cys Tyr Ile Cys His Arg Gln Leu Leu Phe Cys Arg
                   725                     730                     735
Val Thr Leu Gly Lys Ser Phe Leu Gln Phe Ser Ala Met Lys Met Ala
                   740                     745                     750
His Ser Pro Pro Gly His His Ser Val Thr Gly Arg Pro Ser Val Asn
                   755                     760                     765
Gly Leu Ala Leu Ala Glu Tyr Val Ile Tyr Arg Gly Glu Gln Ala Tyr
         770                     775                     780
Pro Glu Tyr Leu Ile Thr Tyr Gln Ile Met Arg Pro Glu Gly Met Val
785                     790                     795                     800
Asp Gly
```

<210> 42
<211> 5175
<212> DNA
<213> Homo Sapien

<400> 42

```
tctgatgcca atgcaagtta cttaagagca gctcgagctg acaccttga aaaggccctc        60
gactacataa aaaatggagt tgacatcaac atttgcaatc agaatgggtt gaacgctctc       120
caccttgctt ccaaagaagg ccatgtagag gttgtttctg agctgctgca gagagaagcc       180
aatgtggatg cagctacaaa gaaaggaaac acagcattgc acatcgcatc tttggctggg       240
caagcagagg tggtaaaagt cttggttaca aatggagcca atgtcaatgc acaatctcag       300
aatggtttca cgccattgta tatggcagcc caggaaaatc acctggaagt tgtcaagttt       360
cttcttgaca atggtgcaag ccagagccta gccacagagg atggcttcac accattggca       420
gtggctttgc aacaaggtca cgaccaagtc gtttcgctcc tgctagagaa tgacaccaaa       480
ggaaaagtgc gtctcccagc tcttcatatc gcggcccgaa aagacgacac gaaagccgcc       540
gccctgctgc tgcagaatga caacaatgca gatgtggaat caaagagtgg cttcactccg       600
ctccacatag ctgctcacta tggaaatatc aatgtagcca cgttgctgtt aaaccgagcg       660
gctgctgtgg atttcaccgc aaggaatgac atcactcctt acatgttgc atcaaaaaga       720
ggaaatgcaa atatggtaaa actattgctc gatcgaggag ctaaaatcga tgccaaaacc       780
```

```
aggagtggtc tgacaccact gcactgtgga gcaaggagtg gccacgagca ggtggtagaa      840
atgttgcttg atcgagctgc ccccattctt tcaaaaacca agaatggatt atctccattg      900
cacatggcca cacaaggggga tcatttaaac tgcgtccagc ttctcctcca gcataatgta      960
cccgtggatg atgtcaccaa tgactacctg actgccctac acgtggctgc ccactgtggc     1020
cattacaaag ttgccaaggt tctcttggat aagaaagcta accccaatgc caaagccctg     1080
aatggctttа ccctcttca tattgcctgc aagaagaatc gaattaaagt aatggaactc     1140
cttctgaaac acggtgcatc catccaagct gtaaccgaga gaggagaaac agcactgcac     1200
atggcagctc gctccggcca agctgaagtt gtgcggtatc tggtacaaga cggagctcag     1260
gtagaagcta aagctaagga tgaccaaaca ccactccaca tttcagcccg actggggaaa     1320
gcagacatag tacaacagct gttgcagcaa ggggcatctc caaatgcagc cacaacttct     1380
gggtacaccc cacttcacct ttccgcccga gagggggcatg aggatgtggc cgcgttcctt     1440
ttggatcatg gagcgtcttt atctataaca acaaagagcg ggctaacacc actgcatgta     1500
gctgcacatt acgataatca gaaagtggcc cttctgcttt tggaccaagg agcctcacct     1560
cacgcagccg caaagaatgg ttatacgcca ctgcacatcg ctgccaaaaa gaaccagatg     1620
gacatagcga caactctgct ggaatatggt gctgatgcca acgcagttac ccggcaagga     1680
attgcttccg tccatctcgc agctcaggaa gggcacgtgg acatggtgtc gctgctcctc     1740
ggtagaaatg cgaatgtgaa cctgagcaat aagagcggcc tgaccccact ccatttggct     1800
gctcaagaag atcgagtgaa tgtggcagaa gtcctcgtaa accaaggggc tcatgtggac     1860
gcccagacaa aggtatacgg ccctcccttg ccacacggaa aagaatgtgt ccatttggtg     1920
actgcaaatg ggtatacgcc attacatcaa gcagcacagc aggggcatac gcatataata     1980
aatgtcttac ttcagaacaa cgcctccccc aatgaactca ctgtgactgt cacagagaag     2040
cacaaaatga atgttccaga aacgatgaat gaagttcttg atatgtctga tgatgaagtt     2100
cgtaaagcca atgcccctga aatgctcagt gatggcgaat atatctcaga tgttgaagaa     2160
ggtaatagat gcacatggta caaaattccc aaggtacaag agtttacggt gaaaactgac     2220
actttcaaaa gggaagcttt tgatgtgggc ttactctcta catctgcagg tgaagatgca     2280
atgaccgggg acacagacaa atatcttggg ccacaggacc ttaaggaatt gggtgatgat     2340
tccctgcctg cagagggtta catgggcttt agtctcggag cgcgttctgc caggtttctg     2400
gttagcttta tggtggacgc gagagggggc tccatgagag gaagccgtca tcacgggatg     2460
agaatcatca ttcctccacg caagtgtact gcccccactc gaatcacctg ccgtttggta     2520
aagagacata aactggccaa cccacccccc atggtggaag gagagggatt agccagtagg     2580
ctggtagaaa tgggtcctgc aggggcacaa tttttaggcc ctgtcatagt ggaaatccct     2640
cactttgggt ccatgagagg aaaagagaga gaactcattg ttcttcgaag tgaaaatggt     2700
gaaacttgga aggagcatca gtttgacagc aaaaatgaag atttaaccga gttacttaat     2760
ggcatggatg aagaacttga tagcccagaa gagttaggga aaaagcgtat ctgcaggatt     2820
atcacgaaag atttcccccca gtatttttgca gtggtttccc ggattaagca ggaaagcaac     2880
cagattggtc ctgaaggtgg aattctgagc agcaccacag tgccccttgt tcaagcatct     2940
ttcccagagg gtgccctaac taaaagaatt cgagtgggcc tccaggccca gcctgttcca     3000
gatgaaattg tgaaaaagat ccttggaaac aaagcaactt ttagcccaat tgtcactgtg     3060
gaaccaagaa gacggaaatt ccataaacca atcacaatga ccattccggt gcccccgcccc     3120
tcaggagaag gtgtatccaa tggatacaaa ggggacacta cacccaatct gcgtcttctc     3180
tgtagcatta caggggggcac ttcgcctgct cagtgggaag acatcacagg aacaactcct     3240
ttgacgttta taaaagattg tgtctccttt acaaccaatg tttcagccag gtatggaaat     3300
aaaggattcc aaaaagcagt tctggaagga aaacctattt atgttgattg ttatggaaat     3360
ttggccccac ttaccaaagg aggacagcaa cttgttttta actttтattc tttcaaagaa     3420
aatagactgc cattttccat caagattaga gacaccagcc aagagccctg tggtcgtctg     3480
tcttttctga aagaaccaaa gacaacaaaa ggactgcctc aaacagcggt ttgcaactta     3540
aatatcactc tgccagcaca taaaaagatt gagaaaacag atagacgaca gagcttcgca     3600
tccttagctt tacgtaagcg ctacagctac ttgactgagc ctggaatgaa agaaaaaaag     3660
atgcagtccg agttgtccga tgaggaagaa agtacctcaa gaaacacgtc gttgtccgag     3720
acttcccggg gtggccagcc ttcggttaca acgaagtctg ctagagataa gaaaacagag     3780
gcagcacctt taaaatcaaa gagtgaaaag gccggcagtg agaaaaggag cagtagaagg     3840
actgctgatg ccttaacttc ggtcttgaca aaaattaatc gaatagatat agtgacactg     3900
ctagaaggac caatatttga ttatggaaat atttcaggca ccagaagttt tgcagatgag     3960
aacaatgttt ccatgacccc tgttgatggt tatccttccc ttcaagtgga actggaaacc     4020
cccacagggt tgcactacac accacctacc ccttttccagc aagatgatta ttttagtgat     4080
```

                                   - 40 -

```
atctctagca tagaatctcc ccttagaacc cctagtagac tgagtgatgg gctagtgcct    4140
tcccagggga acatagagca ttccgcagat ggacctccag tcgtaactgc agaagacgct    4200
tccttagaag acagcaaact ggaagactca gtgcctttaa cagaaatgcc tgaagcagtg    4260
gatgtagatg agagccagtt ggagaatgta tgtctgagtg agtatcctca ataccttgga    4320
aatttggctg ggtccccaaa agatgttaaa ccagcagagc ctagaaaact aggagtaagc    4380
tctgagcagc aggagaaagg aaaatctggt cctgatgagg agatgatgga agagaaactc    4440
aaatctctat ttgaggacat tcaacttgaa gaaggagtag agtctgagga gatgacagaa    4500
gaaaaagtac aggctattct taagcgtgtt cagcaagcag aactggaaat gtcttcaatt    4560
acaggttggc agaatgagac atcaagtgga aacctagagt cctgcgctca agctcgaaga    4620
gtaactggtg ggttactaga tcgactggat gacagccctg accagtgtag agattccatt    4680
acctcatatc tcaaaggaga agctggcaaa tttgaagcaa atggaagcca tacagaaatc    4740
actccagaag caaagacaaa atcttacttt ccagaatccc aaaatgatgt aggaaaacag    4800
agtaccaagg aaactctgaa accaaaaata catggatctg tcatgttga agaaccagca    4860
tcaccactag cagcatatca gaaatctcta gaagaaacca gcaagcttat aatagaagag    4920
actaaaccct gtgtgcctga cttgaaagac agtgagagtg attcaagctc agaggaagag    4980
cggagagtca ctacccgagt tattcgccgg cgtttgatta taaagggaga ggaagcaaaa    5040
aacattcctg gtgaatctgt cacagaagaa caatttactg atgaagaagg caacctcatc    5100
accagaaaag gagaaggttt taaggtgaaa acgaagaaag aaatccggca tgtggaaaag    5160
aagagccact cgtaa                                                     5175
```

<210> 43
<211> 1724
<212> PRT
<213> Homo Sapien

<400> 43

```
Ser Asp Ala Asn Ala Ser Tyr Leu Arg Ala Ala Arg Ala Gly His Leu
 1               5                  10                  15
Glu Lys Ala Leu Asp Tyr Ile Lys Asn Gly Val Asp Ile Asn Ile Cys
            20                  25                  30
Asn Gln Asn Gly Leu Asn Ala Leu His Leu Ala Ser Lys Glu Gly His
        35                  40                  45
Val Glu Val Val Ser Glu Leu Leu Gln Arg Glu Ala Asn Val Asp Ala
    50                  55                  60
Ala Thr Lys Lys Gly Asn Thr Ala Leu His Ile Ala Ser Leu Ala Gly
65                  70                  75                  80
Gln Ala Glu Val Val Lys Val Leu Val Thr Asn Gly Ala Asn Val Asn
                85                  90                  95
Ala Gln Ser Gln Asn Gly Phe Thr Pro Leu Tyr Met Ala Ala Gln Glu
            100                 105                 110
Asn His Leu Glu Val Val Lys Phe Leu Leu Asp Asn Gly Ala Ser Gln
        115                 120                 125
Ser Leu Ala Thr Glu Asp Gly Phe Thr Pro Leu Ala Val Ala Leu Gln
    130                 135                 140
Gln Gly His Asp Gln Val Val Ser Leu Leu Leu Glu Asn Asp Thr Lys
145                 150                 155                 160
Gly Lys Val Arg Leu Pro Ala Leu His Ile Ala Ala Arg Lys Asp Asp
                165                 170                 175
Thr Lys Ala Ala Ala Leu Leu Leu Gln Asn Asp Asn Asn Ala Asp Val
            180                 185                 190
Glu Ser Lys Ser Gly Phe Thr Pro Leu His Ile Ala Ala His Tyr Gly
        195                 200                 205
Asn Ile Asn Val Ala Thr Leu Leu Leu Asn Arg Ala Ala Ala Val Asp
```

```
            210                   215                   220
Phe Thr Ala Arg Asn Asp Ile Thr Pro Leu His Val Ala Ser Lys Arg
225                   230                   235                   240
Gly Asn Ala Asn Met Val Lys Leu Leu Leu Asp Arg Gly Ala Lys Ile
                245                   250                   255
Asp Ala Lys Thr Arg Asp Gly Leu Thr Pro Leu His Cys Gly Ala Arg
                260                   265                   270
Ser Gly His Glu Gln Val Val Glu Met Leu Leu Asp Arg Ala Ala Pro
            275                   280                   285
Ile Leu Ser Lys Thr Lys Asn Gly Leu Ser Pro Leu His Met Ala Thr
            290                   295                   300
Gln Gly Asp His Leu Asn Cys Val Gln Leu Leu Leu Gln His Asn Val
305                   310                   315                   320
Pro Val Asp Asp Val Thr Asn Asp Tyr Leu Thr Ala Leu His Val Ala
                325                   330                   335
Ala His Cys Gly His Tyr Lys Val Ala Lys Val Leu Leu Asp Lys Lys
                340                   345                   350
Ala Asn Pro Asn Ala Lys Ala Leu Asn Gly Phe Thr Pro Leu His Ile
            355                   360                   365
Ala Cys Lys Lys Asn Arg Ile Lys Val Met Glu Leu Leu Leu Lys His
            370                   375                   380
Gly Ala Ser Ile Gln Ala Val Thr Glu Arg Gly Glu Thr Ala Leu His
385                   390                   395                   400
Met Ala Ala Arg Ser Gly Gln Ala Glu Val Val Arg Tyr Leu Val Gln
                405                   410                   415
Asp Gly Ala Gln Val Glu Ala Lys Ala Lys Asp Asp Gln Thr Pro Leu
                420                   425                   430
His Ile Ser Ala Arg Leu Gly Lys Ala Asp Ile Val Gln Gln Leu Leu
            435                   440                   445
Gln Gln Gly Ala Ser Pro Asn Ala Ala Thr Thr Ser Gly Tyr Thr Pro
            450                   455                   460
Leu His Leu Ser Ala Arg Glu Gly His Glu Asp Val Ala Ala Phe Leu
465                   470                   475                   480
Leu Asp His Gly Ala Ser Leu Ser Ile Thr Thr Lys Ser Gly Leu Thr
                485                   490                   495
Pro Leu His Val Ala Ala His Tyr Asp Asn Gln Lys Val Ala Leu Leu
                500                   505                   510
Leu Leu Asp Gln Gly Ala Ser Pro His Ala Ala Ala Lys Asn Gly Tyr
            515                   520                   525
Thr Pro Leu His Ile Ala Ala Lys Lys Asn Gln Met Asp Ile Ala Thr
            530                   535                   540
Thr Leu Leu Glu Tyr Gly Ala Asp Ala Asn Ala Val Thr Arg Gln Gly
545                   550                   555                   560
Ile Ala Ser Val His Leu Ala Ala Gln Glu Gly His Val Asp Met Val
                565                   570                   575
Ser Leu Leu Leu Gly Arg Asn Ala Asn Val Asn Leu Ser Asn Lys Ser
                580                   585                   590
Gly Leu Thr Pro Leu His Leu Ala Ala Gln Glu Asp Arg Val Asn Val
            595                   600                   605
Ala Glu Val Leu Val Asn Gln Gly Ala His Val Asp Ala Gln Thr Lys
            610                   615                   620
Val Tyr Gly Pro Pro Leu Pro His Gly Lys Glu Cys Val His Leu Val
625                   630                   635                   640
Thr Ala Asn Gly Tyr Thr Pro Leu His Gln Ala Ala Gln Gln Gly His
                645                   650                   655
```

Thr His Ile Ile Asn Val Leu Leu Gln Asn Asn Ala Ser Pro Asn Glu
                660   665   670
Leu Thr Val Thr Val Thr Glu Lys His Lys Met Asn Val Pro Glu Thr
        675   680   685
Met Asn Glu Val Leu Asp Met Ser Asp Asp Glu Val Arg Lys Ala Asn
    690   695   700
Ala Pro Glu Met Leu Ser Asp Gly Glu Tyr Ile Ser Asp Val Glu Glu
705   710   715   720
Gly Asn Arg Cys Thr Trp Tyr Lys Ile Pro Lys Val Gln Glu Phe Thr
                725   730   735
Val Lys Thr Asp Thr Phe Lys Arg Glu Ala Phe Asp Val Gly Leu Leu
            740   745   750
Ser Thr Ser Ala Gly Glu Asp Ala Met Thr Gly Asp Thr Asp Lys Tyr
        755   760   765
Leu Gly Pro Gln Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro Ala
    770   775   780
Glu Gly Tyr Met Gly Phe Ser Leu Gly Ala Arg Ser Ala Arg Phe Leu
785   790   795   800
Val Ser Phe Met Val Asp Ala Arg Gly Gly Ser Met Arg Gly Ser Arg
                805   810   815
His His Gly Met Arg Ile Ile Ile Pro Pro Arg Lys Cys Thr Ala Pro
            ·820   825   830
Thr Arg Ile Thr Cys Arg Leu Val Lys Arg His Lys Leu Ala Asn Pro
        835   840   845
Pro Pro Met Val Glu Gly Glu Gly Leu Ala Ser Arg Leu Val Glu Met
    850   855   860
Gly Pro Ala Gly Ala Gln Phe Leu Gly Pro Val Ile Val Glu Ile Pro
865   870   875   880
His Phe Gly Ser Met Arg Gly Lys Glu Arg Glu Leu Ile Val Leu Arg
                885   890   895
Ser Glu Asn Gly Glu Thr Trp Lys Glu His Gln Phe Asp Ser Lys Asn
                900   905   910
Glu Asp Leu Thr Glu Leu Leu Asn Gly Met Asp Glu Glu Leu Asp Ser
        915   920   925
Pro Glu Glu Leu Gly Lys Lys Arg Ile Cys Arg Ile Ile Thr Lys Asp
    930   935   940
Phe Pro Gln Tyr Phe Ala Val Val Ser Arg Ile Lys Gln Glu Ser Asn
945   950   955   960
Gln Ile Gly Pro Glu Gly Gly Ile Leu Ser Ser Thr Thr Val Pro Leu
                965   970   975
Val Gln Ala Ser Phe Pro Glu Gly Ala Leu Thr Lys Arg Ile Arg Val
            980   985   990
Gly Leu Gln Ala Gln Pro Val Pro Asp Glu Ile Val Lys Lys Ile Leu
        995   1000   1005
Gly Asn Lys Ala Thr Phe Ser Pro Ile Val Thr Val Glu Pro Arg Arg
    1010   1015   1020
Arg Lys Phe His Lys Pro Ile Thr Met Thr Ile Pro Val Pro Pro Pro
1025   1030   1035   1040
Ser Gly Glu Gly Val Ser Asn Gly Tyr Lys Gly Asp Thr Thr Pro Asn
                1045   1050   1055
Leu Arg Leu Leu Cys Ser Ile Thr Gly Gly Thr Ser Pro Ala Gln Trp
            1060   1065   1070
Glu Asp Ile Thr Gly Thr Thr Pro Leu Thr Phe Ile Lys Asp Cys Val
        ′ 1075   1080   1085
Ser Phe Thr Thr Asn Val Ser Ala Arg Tyr Gly Asn Lys Gly Phe Gln

```
        1090                1095                1100
Lys Ala Val Leu Glu Gly Lys Pro Ile Tyr Val Asp Cys Tyr Gly Asn
1105                1110                1115                1120
Leu Ala Pro Leu Thr Lys Gly Gly Gln Gln Leu Val Phe Asn Phe Tyr
                1125                1130                1135
Ser Phe Lys Glu Asn Arg Leu Pro Phe Ser Ile Lys Ile Arg Asp Thr
                1140                1145                1150
Ser Gln Glu Pro Cys Gly Arg Leu Ser Phe Leu Lys Glu Pro Lys Thr
                1155                1160                1165
Thr Lys Gly Leu Pro Gln Thr Ala Val Cys Asn Leu Asn Ile Thr Leu
                1170                1175                1180
Pro Ala His Lys Lys Ile Glu Lys Thr Asp Arg Arg Gln Ser Phe Ala
1185                1190                1195                1200
Ser Leu Ala Leu Arg Lys Arg Tyr Ser Tyr Leu Thr Glu Pro Gly Met
                1205                1210                1215
Lys Glu Lys Lys Met Gln Ser Glu Leu Ser Asp Glu Glu Glu Ser Thr
                1220                1225                1230
Ser Arg Asn Thr Ser Leu Ser Glu Thr Ser Arg Gly Gly Gln Pro Ser
                1235                1240                1245
Val Thr Thr Lys Ser Ala Arg Asp Lys Lys Thr Glu Ala Ala Pro Leu
                1250                1255                1260
Lys Ser Lys Ser Glu Lys Ala Gly Ser Glu Lys Arg Ser Ser Arg Arg
1265                1270                1275                1280
Thr Ala Asp Ala Leu Thr Ser Val Leu Thr Lys Ile Asn Arg Ile Asp
                1285                1290                1295
Ile Val Thr Leu Leu Glu Gly Pro Ile Phe Asp Tyr Gly Asn Ile Ser
                1300                1305                1310
Gly Thr Arg Ser Phe Ala Asp Glu Asn Asn Val Phe His Asp Pro Val
                1315                1320                1325
Asp Gly Tyr Pro Ser Leu Gln Val Glu Leu Glu Thr Pro Thr Gly Leu
                1330                1335                1340
His Tyr Thr Pro Pro Thr Pro Phe Gln Gln Asp Asp Tyr Phe Ser Asp
1345                1350                1355                1360
Ile Ser Ser Ile Glu Ser Pro Leu Arg Thr Pro Ser Arg Leu Ser Asp
                1365                1370                1375
Gly Leu Val Pro Ser Gln Gly Asn Ile Glu His Ser Ala Asp Gly Pro
                1380                1385                1390
Pro Val Val Thr Ala Glu Asp Ala Ser Leu Glu Asp Ser Lys Leu Glu
                1395                1400                1405
Asp Ser Val Pro Leu Thr Glu Met Pro Glu Ala Val Asp Val Asp Glu
1410                1415                1420
Ser Gln Leu Glu Asn Val Cys Leu Ser Glu Tyr Pro Gln Tyr Leu Gly
1425                1430                1435                1440
Asn Leu Ala Gly Ser Pro Lys Asp Val Lys Pro Ala Glu Pro Arg Lys
                1445                1450                1455
Leu Gly Val Ser Ser Glu Gln Gln Glu Lys Gly Lys Ser Gly Pro Asp
                1460                1465                1470
Glu Glu Met Met Glu Glu Lys Leu Lys Ser Leu Phe Glu Asp Ile Gln
                1475                1480                1485
Leu Glu Glu Gly Val Glu Ser Glu Glu Met Thr Glu Glu Lys Val Gln
                1490                1495                1500
Ala Ile Leu Lys Arg Val Gln Gln Ala Glu Leu Glu Met Ser Ser Ile
1505                1510                1515                1520
Thr Gly Trp Gln Asn Glu Thr Ser Ser Gly Asn Leu Glu Ser Cys Ala
                1525                1530                1535
```

Gln Ala Arg Arg Val Thr Gly Gly Leu Leu Asp Arg Leu Asp Asp Ser
          1540   1545   1550

Pro Asp Gln Cys Arg Asp Ser Ile Thr Ser Tyr Leu Lys Gly Glu Ala
       1555   1560   1565

Gly Lys Phe Glu Ala Asn Gly Ser His Thr Glu Ile Thr Pro Glu Ala
    1570   1575   1580

Lys Thr Lys Ser Tyr Phe Pro Glu Ser Gln Asn Asp Val Gly Lys Gln
1585   1590   1595   1600

Ser Thr Lys Glu Thr Leu Lys Pro Lys Ile His Gly Ser Gly His Val
          1605   1610   1615

Glu Glu Pro Ala Ser Pro Leu Ala Ala Tyr Gln Lys Ser Leu Glu Glu
          1620   1625   1630

Thr Ser Lys Leu Ile Ile Glu Glu Thr Lys Pro Cys Val Pro Asp Leu
       1635   1640   1645

Lys Asp Ser Glu Ser Asp Ser Ser Ser Glu Glu Glu Arg Arg Val Thr
    1650   1655   1660

Thr Arg Val Ile Arg Arg Arg Leu Ile Ile Lys Gly Glu Glu Ala Lys
1665   1670   1675   1680

Asn Ile Pro Gly Glu Ser Val Thr Glu Glu Gln Phe Thr Asp Glu Glu
          1685   1690   1695

Gly Asn Leu Ile Thr Arg Lys Gly Glu Gly Phe Lys Val Lys Thr Lys
       1700   1705   1710

Lys Glu Ile Arg His Val Glu Lys Lys Ser His Ser
       1715   1720

<210> 44
<211> 1305
<212> DNA
<213> Homo Sapien

<400> 44

```
atggaggagg cggcggcggg ggctacgaag gcgtcttcga gacgtgaagc cgaggagatg      60
aagctggagc cattacaaga gcgtgagccc gcgccggagg agaacttgac gtggagcagc     120
agcggcggcg acgagaagtt tatgacatca gggtttgaag acaagcaatc aacctgtgag     180
acaaaggaac aggagccaaa attggtgaaa cccaagaaaa agagaagaaa aaagtcagtc     240
tatactgtag gcctgagagg ctaatcaat cttgggaaca cttgttttat gaattgtatt     300
gtccaggcac ttacccatat tcctctactg aaagatttct tcctctctga caagcacaaa     360
tgtataatga caagccccag cttgtgtctg gtctgtgaaa tgtcttcgct ttttcatgct     420
atgtactctg ggagccgaac tcctcacatt ccctataagt tactgcatct gatatggatc     480
catgcagaac atttagcagg gtacaggcag caggatgccc atgagttcct tattgcaata     540
ttagacgtgc tacatagaca cagcaaagat gatagtggtg ggcaggaggc caataacccc     600
aactgctgta actgcatcat agaccaaatc tttacaggt gcctgcaatc agatgtcaca     660
tgtcaagcct gccatagtgt ttctaccacc atagacccat gctgggacat cagtttggac     720
ttgcctggct cttgtgccac attcgattcc cagaacccag agagggctga cagcacagtg     780
agcagggatg accacatacc aggaatcccc tcacttacag actgtctaca gtggtttaca     840
aggccagagc acctaggaag cagtgccaaa atcaaatgca atagttgcca aagctaccag     900
gagtctacta aacagctcac aatgaaaaaa ttacccattg tggcttgttt tcatctcaag     960
cggtttgagc atgtaggcaa acagaggcga aagattaata cctttatctc ctttcccttg    1020
gagctggaca tgactccgtt tttggcctct actaaagaga gcagaatgaa agaaggccag    1080
ccaccaacag attgtgtgcc caatgagaat aagtattcct tgtttgcagt gattaatcac    1140
catggaactt tggaaagtgg ccactatacc agcttcatcc ggcaacaaaa ggaccagtgg    1200
ttcagctgtg atgatgccat catcaccaag gctaccattg aggacttact ctacagtgaa    1260
gggtatttac tgttctatca caaacagggt ctagagaaag actag                    1305
```

<210> 45

<211> 434
<212> PRT
<213> Homo Sapien

<400> 45

```
Met Glu Glu Ala Ala Ala Gly Ala Thr Lys Ala Ser Ser Arg Arg Glu
 1               5                  10                  15
Ala Glu Glu Met Lys Leu Glu Pro Leu Gln Glu Arg Glu Pro Ala Pro
            20                  25                  30
Glu Glu Asn Leu Thr Trp Ser Ser Ser Gly Gly Asp Glu Lys Phe Met
            35                  40                  45
Thr Ser Gly Phe Glu Asp Lys Gln Ser Thr Cys Glu Thr Lys Glu Gln
    50                  55                  60
Glu Pro Lys Leu Val Lys Pro Lys Lys Arg Arg Lys Lys Ser Val
65                  70                  75                  80
Tyr Thr Val Gly Leu Arg Gly Leu Ile Asn Leu Gly Asn Thr Cys Phe
                85                  90                  95
Met Asn Cys Ile Val Gln Ala Leu Thr His Ile Pro Leu Leu Lys Asp
            100                 105                 110
Phe Phe Leu Ser Asp Lys His Lys Cys Ile Met Thr Ser Pro Ser Leu
            115                 120                 125
Cys Leu Val Cys Glu Met Ser Ser Leu Phe His Ala Met Tyr Ser Gly
    130                 135                 140
Ser Arg Thr Pro His Ile Pro Tyr Lys Leu Leu His Leu Ile Trp Ile
145                 150                 155                 160
His Ala Glu His Leu Ala Gly Tyr Arg Gln Gln Asp Ala His Glu Phe
            165                 170                 175
Leu Ile Ala Ile Leu Asp Val Leu His Arg His Ser Lys Asp Asp Ser
            180                 185                 190
Gly Gly Gln Glu Ala Asn Asn Pro Asn Cys Cys Asn Cys Ile Ile Asp
            195                 200                 205
Gln Ile Phe Thr Gly Gly Leu Gln Ser Asp Val Thr Cys Gln Ala Cys
    210                 215                 220
His Ser Val Ser Thr Thr Ile Asp Pro Cys Trp Asp Ile Ser Leu Asp
225                 230                 235                 240
Leu Pro Gly Ser Cys Ala Thr Phe Asp Ser Gln Asn Pro Glu Arg Ala
            245                 250                 255
Asp Ser Thr Val Ser Arg Asp Asp His Ile Pro Gly Ile Pro Ser Leu
            260                 265                 270
Thr Asp Cys Leu Gln Trp Phe Thr Arg Pro Glu His Leu Gly Ser Ser
            275                 280                 285
Ala Lys Ile Lys Cys Asn Ser Cys Gln Ser Tyr Gln Glu Ser Thr Lys
    290                 295                 300
Gln Leu Thr Met Lys Lys Leu Pro Ile Val Ala Cys Phe His Leu Lys
305                 310                 315                 320
Arg Phe Glu His Val Gly Lys Gln Arg Arg Lys Ile Asn Thr Phe Ile
            325                 330                 335
Ser Phe Pro Leu Glu Leu Asp Met Thr Pro Phe Leu Ala Ser Thr Lys
            340                 345                 350
Glu Ser Arg Met Lys Glu Gly Gln Pro Pro Thr Asp Cys Val Pro Asn
            355                 360                 365
Glu Asn Lys Tyr Ser Leu Phe Ala Val Ile Asn His His Gly Thr Leu
            370                 375                 380
Glu Ser Gly His Tyr Thr Ser Phe Ile Arg Gln Gln Lys Asp Gln Trp
385                 390                 395                 400
```

- 46 -

```
Phe Ser Cys Asp Asp Ala Ile Ile Thr Lys Ala Thr Ile Glu Asp Leu
                405             410             415
Leu Tyr Ser Glu Gly Tyr Leu Leu Phe Tyr His Lys Gln Gly Leu Glu
            420             425             430
Lys Asp


<210> 46
<211> 1337
<212> DNA
<213> Homo Sapien

<400> 46
gcagtaacag ccaccctcct gtcatcgcca ccaccgttgt gtccctcaag gctgcgaatc      60
tgacgtatat gccctcatcc agcggctctg cccgctcgct gaattgtgga tgcagcagtg     120
ccagctgctg cactgtggca acctacgaca aggacaatca ggcccagacc caagccattg     180
ccgctggcac caccaccact gccatcggaa cctctaccac ctgccctgct aaccagatgg     240
tcaacaataa tgagaataca ggctctctaa gtccatcaag tggggtgggc agccctgtgt     300
cagggacccc caagcagcta gccagcatca aaataatcta ccccaatgac ttggcaaaga     360
agatgaccaa atgcagcaag agtcacctgc cgagtcaggg ccctgtcatc attgactgca     420
ggcccttcat ggagtacaac aagagtcaca tccaaggagc tgtccacatt aactgtgccg     480
ataagatcag ccggcggaga ctgcagcagg caagatcac tgtcctagac ttgatttcct     540
gtagggaagg caaggactct ttcaagagga tcttttccaa agaaattata gtttatgatg     600
agaataccaa tgagccaagc cgagtgatgc cctcccagcc acttcacata gtcctcgagt     660
ccctgaagag agaaggcaaa gaacctctgg tgttgaaagg tggacttagt agttttaagc     720
agaaccatga aaacctctgt gacaactccc tccagctcca agagtgccgg gaggtggggg     780
gcggcgcatc cgcggcctcg agcttgctac ctcagcccat ccccaccacc cctgacatcg     840
agaacgctga gctcaccccc atcttgccct tcctgttcct tggcaatgag caggatgctc     900
aggacctgga caccatgcag cggctgaaca tcggctacgt catcaacgtc accactcatc     960
ttccctcta ccactatgag aaaggcctgt caactacaa gcggctgcca gccactgaca    1020
gcaacaagca gaacctgcgg cagtactttg aagaggcttt tgagttcatt gaggaagctc    1080
accagtgtgg gaaggggctt ctcatccact gccaggctgg ggtgtcccgc tccgccacca    1140
tcgtcatcgc ttacttgatg aagcacactc ggatgaccat gactgatgct tataaatttg    1200
tcaaaggcaa acgaccaatt atctccccaa accttaactt catgggcag ttgctagagt    1260
tcgaggaaga cctaaacaac ggtgtgacac cgagaatcct tacaccaaag ctgatgggcg    1320
tggagacggt tgtgtga                                                   1337

<210> 47
<211> 444
<212> PRT
<213> Homo Sapien

<400> 47
Ser Asn Ser His Pro Pro Val Ile Ala Thr Thr Val Val Ser Leu Lys
 1           5              10              15
Ala Ala Asn Leu Thr Tyr Met Pro Ser Ser Ser Gly Ser Ala Arg Ser
            20              25              30
Leu Asn Cys Gly Cys Ser Ser Ala Ser Cys Cys Thr Val Ala Thr Tyr
        35              40              45
Asp Lys Asp Asn Gln Ala Gln Thr Gln Ala Ile Ala Ala Gly Thr Thr
    50              55              60
Thr Thr Ala Ile Gly Thr Ser Thr Thr Cys Pro Ala Asn Gln Met Val
65              70              75              80
Asn Asn Asn Glu Asn Thr Gly Ser Leu Ser Pro Ser Ser Gly Val Gly
            85              90              95
```

```
Ser Pro Val Ser Gly Thr Pro Lys Gln Leu Ala Ser Ile Lys Ile Ile
            100                 105             110
Tyr Pro Asn Asp Leu Ala Lys Lys Met Thr Lys Cys Ser Lys Ser His
            115                 120                 125
Leu Pro Ser Gln Gly Pro Val Ile Ile Asp Cys Arg Pro Phe Met Glu
            130                 135                 140
Tyr Asn Lys Ser His Ile Gln Gly Ala Val His Ile Asn Cys Ala Asp
145                 150                 155                 160
Lys Ile Ser Arg Arg Arg Leu Gln Gln Gly Lys Ile Thr Val Leu Asp
                165                 170                 175
Leu Ile Ser Cys Arg Glu Gly Lys Asp Ser Phe Lys Arg Ile Phe Ser
                180                 185                 190
Lys Glu Ile Ile Val Tyr Asp Glu Asn Thr Asn Glu Pro Ser Arg Val
                195                 200                 205
Met Pro Ser Gln Pro Leu His Ile Val Leu Glu Ser Leu Lys Arg Glu
            210                 215                 220
Gly Lys Glu Pro Leu Val Leu Lys Gly Gly Leu Ser Ser Phe Lys Gln
225                 230                 235                 240
Asn His Glu Asn Leu Cys Asp Asn Ser Leu Gln Leu Gln Glu Cys Arg
                245                 250                 255
Glu Val Gly Gly Gly Ala Ser Ala Ala Ser Ser Leu Leu Pro Gln Pro
                260                 265                 270
Ile Pro Thr Thr Pro Asp Ile Glu Asn Ala Glu Leu Thr Pro Ile Leu
            275                 280                 285
Pro Phe Leu Phe Leu Gly Asn Glu Gln Asp Ala Gln Asp Leu Asp Thr
            290                 295                 300
Met Gln Arg Leu Asn Ile Gly Tyr Val Ile Asn Val Thr Thr His Leu
305                 310                 315                 320
Pro Leu Tyr His Tyr Glu Lys Gly Leu Phe Asn Tyr Lys Arg Leu Pro
                325                 330                 335
Ala Thr Asp Ser Asn Lys Gln Asn Leu Arg Gln Tyr Phe Glu Glu Ala
                340                 345                 350
Phe Glu Phe Ile Glu Glu Ala His Gln Cys Gly Lys Gly Leu Leu Ile
            355                 360                 365
His Cys Gln Ala Gly Val Ser Arg Ser Ala Thr Ile Val Ile Ala Tyr
            370                 375                 380
Leu Met Lys His Thr Arg Met Thr Met Thr Asp Ala Tyr Lys Phe Val
385                 390                 395                 400
Lys Gly Lys Arg Pro Ile Ile Ser Pro Asn Leu Asn Phe Met Gly Gln
                405                 410                 415
Leu Leu Glu Phe Glu Glu Asp Leu Asn Asn Gly Val Thr Pro Arg Ile
                420                 425                 430
Leu Thr Pro Lys Leu Met Gly Val Glu Thr Val Val
                435                 440
```

<210> 48
<211> 3378
<212> DNA
<213> Homo Sapien

<400> 48

```
ttgcaggaat catcggaatc cttcaccatg gcatccagcc cggcccagcg tcggcgaggc      60
aatgatcctc tcacctccag ccctggccga agctcccggc gtactgatgc cctcacctcc     120
agccctggcc gtgaccttcc accatttgag gatgagtccg aggggctcct aggcacagag     180
gggcccctgg aggaagaaga ggatggagag gagctcattg agatggcat ggaaagggac     240
```

```
taccgcgcca tcccagagct ggacgcctat gaggccgagg gactggctct ggatgatgag     300
gacgtagagg agctgacggc cagtcagagg gaggcagcag agcgggccat gcggcagcgt     360
gaccgggagg ctggccgggg cctgggccgc atgcgccgtg ggctcctgta tgacagcgat     420
gaggaggacg aggagcgccc tgcccgcaag cgccgccagg tggagcgggc cacggaggac     480
ggcgaggagg acgaggagat gattgagagc atcgagaacc tggaggatct caaaggccac     540
tctgtgcgcg agtgggtgag catggcgggc ccccggctgg agatccacca ccgcttcaag     600
aacttcctgc gcactcacgt cgacagccac ggccacaacg tcttcaagga gcgcatcagc     660
gacatgtgca aagagaaccg tgagagcctg gtggtgaact atgaggactt ggcagccagg     720
gagcacgtgc tggcctactt cctgcctgag gcaccggcgg agctgctgca gatctttgat     780
gaggctgccc tggaggtggt actggccatg taccccaagt acgaccgcat caccaaccac     840
atccatgtcc gcatctccca cctgcctctg gtggaggagc tgcgctcgct gaggcagctg     900
catctgaacc agctgatccg caccagtggg gtggtgacca gctgcactgg cgtcctgccc     960
cagctcagca tggtcaagta caactgcaac aagtgcaatt cgtcctgggg tcctttctgc    1020
cagtcccaga accaggaggt gaaaccaggc tcctgtcctg agtgccagtc ggccggcccc    1080
tttgaggtca acatggagga gaccatctat cagaactacc agcgtatccg aatccaggag    1140
agtccaggca aagtggcggc tggccggctg ccccgctcca aggacgccat tctcctcgca    1200
gatctggtgg acagctgcaa gccaggagac gagatagagc tgactggcat ctatcacaac    1260
aactatgatg ctccctcaa cactgccaat ggcttccctg tctttgccac tgtcatccta    1320
gccaaccacg tggccaagaa ggacaacaag gttgctgtag gggaactgac cgatgaagat    1380
gtgaagatga tcactagcct ctccaaggat cagcagatcg agagaagat ctttgccagc    1440
attgctcctt ccatctatgg tcatgaagac atcaagagag gcctggctct ggccctgttc    1500
ggaggggagc ccaaaaaccc aggtggcaag cacaaggtac gtggtgatat caacgtgctc    1560
ttgtgcggag accctggcac agcgaagtcg cagtttctca agtatattga gaaagtgtcc    1620
agccgagcca tcttcaccac tggccagggg gcgtcggctg tgggcctcac ggcgtatgtc    1680
cagcggcacc ctgtcagcag ggagtggacc ttggaggctg gggccctggt tctggctgac    1740
cgaggagtgt gtctcattga tgaatttgac aagatgaatg accaggacag aaccagcatc    1800
catgaggcca tggagcaaca gagcatctcc atctcgaagg ctggcatcgt cacctccctg    1860
caggctcgct gcacggtcat tgctgccgcc aaccccatag gagggcgcta cgaccccctcg    1920
ctgacttct ctgagaacgt ggacctcaca gagcccatca tctcacgctt tgacatcctg    1980
tgtgtggtga gggacaccgt ggacccagtc caggacgaga tgctggcccg cttcgtggtg    2040
ggcagccacg tcagacacca ccccagcaac aaggaggagg aggggctggc caatggcagc    2100
gctgctgagc ccgccatgcc caacacgtat ggcgtggagc ccctgcccca ggaggtcctg    2160
aagaagtaca tcatctacgc caaggagagg gtccacccga agctcaacca gatggaccag    2220
gacaaggtgg ccaagatgta cagtgacctg aggaaagaat ctatggcgac aggcagcatc    2280
cccattacgg tgcggcacat cgagtccatg atccgcatgg cggaggccca cgcgcgcatc    2340
catctgcggg actatgtgat cgaagacgac gtcaacatgg ccatccgcgt gatgctggag    2400
agcttcatag acacacagaa gttcagcgtc atgcgcagca tgcgcaagac ttttgcccgc    2460
taccttcat tccggcgtga caacaatgag ctgttgctct tcatactgaa gcagttagtg    2520
gcagagcagg tgacatatca gcgcaaccgc tttgggggccc agcaggacac tattgaggtc    2580
cctgagaagg acttggtgga taaggctcgt cagatcaaca tccacaacct ctctgcattt    2640
tatgacagtg agctcttcag gatgaacaag ttcagccacg acctgaaaag gaaaatgatc    2700
ctgcagcagt tctgaggccc tatgccatcc ataaggattc cttgggattc tggtttgggg    2760
tggtcagtgc cctctgtgct ttatggacac aaaaccagag cacttgatga actcggggta    2820
ctaggtcag ggcttatagc aggatgtctg gctgcacctg gcatgactgt ttgtttctcc    2880
aagcctgctt tgtgcttctc acctttgggt gggatgcctt gccagtgtgt cttacttggt    2940
tgctgaacat cttgccacct ccgagtgctt tgtctccact cagtaccttg gatcagagct    3000
gctgagttca ggatgcctgc gtgtggttta ggtgttagcc ttcttacatg gatgtcagga    3060
gagctgctgc cctcttggcg tgagttgcgt attcaggctg cttttgctgc ctttggccag    3120
agagctggtt gaagatgttt gtaatcgttt tcagtctcct gcaggtttct gtgcccctgt    3180
ggtggaagag ggcacgacag tgccagcgca gcgttctggg ctcctcagtc gcaggggtgg    3240
gatgtgagtc atgcggatta tccactcgcc acagttatca gctgccattg ctccctgtct    3300
gtttccccac tctcttattt gtgcattcgg tttggtttct gtagttttaa tttttaataa    3360
agttgaataa aatataaa                                                  3378
```

<210> 49

<211> 904
<212> PRT
<213> Homo Sapien

<400> 49
```
Leu Gln Glu Ser Ser Glu Ser Phe Thr Met Ala Ser Ser Pro Ala Gln
1               5                   10                  15
Arg Arg Arg Gly Asn Asp Pro Leu Thr Ser Ser Pro Gly Arg Ser Ser
            20                  25                  30
Arg Arg Thr Asp Ala Leu Thr Ser Ser Pro Gly Arg Asp Leu Pro Pro
            35                  40                  45
Phe Glu Asp Glu Ser Glu Gly Leu Leu Gly Thr Glu Gly Pro Leu Glu
        50                  55                  60
Glu Glu Glu Asp Gly Glu Glu Leu Ile Gly Asp Gly Met Glu Arg Asp
65                  70                  75                  80
Tyr Arg Ala Ile Pro Glu Leu Asp Ala Tyr Glu Ala Glu Gly Leu Ala
                85                  90                  95
Leu Asp Asp Glu Asp Val Glu Glu Leu Thr Ala Ser Gln Arg Glu Ala
            100                 105                 110
Ala Glu Arg Ala Met Arg Gln Arg Asp Arg Glu Ala Gly Arg Gly Leu
            115                 120                 125
Gly Arg Met Arg Arg Gly Leu Leu Tyr Asp Ser Asp Glu Glu Asp Glu
            130                 135                 140
Glu Arg Pro Ala Arg Lys Arg Arg Gln Val Glu Arg Ala Thr Glu Asp
145                 150                 155                 160
Gly Glu Glu Asp Glu Glu Met Ile Glu Ser Ile Glu Asn Leu Glu Asp
                165                 170                 175
Leu Lys Gly His Ser Val Arg Glu Trp Val Ser Met Ala Gly Pro Arg
            180                 185                 190
Leu Glu Ile His His Arg Phe Lys Asn Phe Leu Arg Thr His Val Asp
            195                 200                 205
Ser His Gly His Asn Val Phe Lys Glu Arg Ile Ser Asp Met Cys Lys
            210                 215                 220
Glu Asn Arg Glu Ser Leu Val Val Asn Tyr Glu Asp Leu Ala Ala Arg
225                 230                 235                 240
Glu His Val Leu Ala Tyr Phe Leu Pro Glu Ala Pro Ala Glu Leu Leu
                245                 250                 255
Gln Ile Phe Asp Glu Ala Ala Leu Glu Val Val Leu Ala Met Tyr Pro
                260                 265                 270
Lys Tyr Asp Arg Ile Thr Asn His Ile His Val Arg Ile Ser His Leu
            275                 280                 285
Pro Leu Val Glu Glu Leu Arg Ser Leu Arg Gln Leu His Leu Asn Gln
            290                 295                 300
Leu Ile Arg Thr Ser Gly Val Val Thr Ser Cys Thr Gly Val Leu Pro
305                 310                 315                 320
Gln Leu Ser Met Val Lys Tyr Asn Cys Asn Lys Cys Asn Phe Val Leu
                325                 330                 335
Gly Pro Phe Cys Gln Ser Gln Asn Gln Glu Val Lys Pro Gly Ser Cys
            340                 345                 350
Pro Glu Cys Gln Ser Ala Gly Pro Phe Glu Val Asn Met Glu Glu Thr
            355                 360                 365
Ile Tyr Gln Asn Tyr Gln Arg Ile Arg Ile Gln Glu Ser Pro Gly Lys
            370                 375                 380
Val Ala Ala Gly Arg Leu Pro Arg Ser Lys Asp Ala Ile Leu Leu Ala
385                 390                 395                 400
```

- 50 -

```
Asp Leu Val Asp Ser Cys Lys Pro Gly Asp Glu Ile Glu Leu Thr Gly
                405             410             415
Ile Tyr His Asn Asn Tyr Asp Gly Ser Leu Asn Thr Ala Asn Gly Phe
                420             425             430
Pro Val Phe Ala Thr Val Ile Leu Ala Asn His Val Ala Lys Lys Asp
            435             440             445
Asn Lys Val Ala Val Gly Glu Leu Thr Asp Glu Asp Val Lys Met Ile
            450             455             460
Thr Ser Leu Ser Lys Asp Gln Gln Ile Gly Glu Lys Ile Phe Ala Ser
465             470             475             480
Ile Ala Pro Ser Ile Tyr Gly His Glu Asp Ile Lys Arg Gly Leu Ala
                485             490             495
Leu Ala Leu Phe Gly Gly Glu Pro Lys Asn Pro Gly Gly Lys His Lys
            500             505             510
Val Arg Gly Asp Ile Asn Val Leu Leu Cys Gly Asp Pro Gly Thr Ala
            515             520             525
Lys Ser Gln Phe Leu Lys Tyr Ile Glu Lys Val Ser Ser Arg Ala Ile
            530             535             540
Phe Thr Thr Gly Gln Gly Ala Ser Ala Val Gly Leu Thr Ala Tyr Val
545             550             555             560
Gln Arg His Pro Val Ser Arg Glu Trp Thr Leu Glu Ala Gly Ala Leu
                565             570             575
Val Leu Ala Asp Arg Gly Val Cys Leu Ile Asp Glu Phe Asp Lys Met
                580             585             590
Asn Asp Gln Asp Arg Thr Ser Ile His Glu Ala Met Glu Gln Gln Ser
                595             600             605
Ile Ser Ile Ser Lys Ala Gly Ile Val Thr Ser Leu Gln Ala Arg Cys
            610             615             620
Thr Val Ile Ala Ala Ala Asn Pro Ile Gly Gly Arg Tyr Asp Pro Ser
625             630             635             640
Leu Thr Phe Ser Glu Asn Val Asp Leu Thr Glu Pro Ile Ile Ser Arg
                645             650             655
Phe Asp Ile Leu Cys Val Val Arg Asp Thr Val Asp Pro Val Gln Asp
                660             665             670
Glu Met Leu Ala Arg Phe Val Val Gly Ser His Val Arg His His Pro
            675             680             685
Ser Asn Lys Glu Glu Glu Gly Leu Ala Asn Gly Ser Ala Ala Glu Pro
            690             695             700
Ala Met Pro Asn Thr Tyr Gly Val Glu Pro Leu Pro Gln Glu Val Leu
705             710             715             720
Lys Lys Tyr Ile Ile Tyr Ala Lys Glu Arg Val His Pro Lys Leu Asn
                725             730             735
Gln Met Asp Gln Asp Lys Val Ala Lys Met Tyr Ser Asp Leu Arg Lys
            740             745             750
Glu Ser Met Ala Thr Gly Ser Ile Pro Ile Thr Val Arg His Ile Glu
            755             760             765
Ser Met Ile Arg Met Ala Glu Ala His Ala Arg Ile His Leu Arg Asp
            770             775             780
Tyr Val Ile Glu Asp Asp Val Asn Met Ala Ile Arg Val Met Leu Glu
785             790             795             800
Ser Phe Ile Asp Thr Gln Lys Phe Ser Val Met Arg Ser Met Arg Lys
                805             810             815
Thr Phe Ala Arg Tyr Leu Ser Phe Arg Arg Asp Asn Asn Glu Leu Leu
            820             825             830
Leu Phe Ile Leu Lys Gln Leu Val Ala Glu Gln Val Thr Tyr Gln Arg
```

Asn Arg Phe Gly Ala Gln Gln Asp Thr Ile Glu Val Pro Glu Lys Asp
    850   855   860
Leu Val Asp Lys Ala Arg Gln Ile Asn Ile His Asn Leu Ser Ala Phe
865   870   875   880
Tyr Asp Ser Glu Leu Phe Arg Met Asn Lys Phe Ser His Asp Leu Lys
            885   890   895
Arg Lys Met Ile Leu Gln Gln Phe
                900

<210> 50
<211> 2815
<212> DNA
<213> Homo Sapien

<400> 50
gcctggagcc gacaccaccg ccatcatgcc ggccgtgtcc aagggcgatg ggatgcgggg   60
gctcgcggtg ttcatctccg acatccggaa ctgtaagagc aaagaggcgg aaattaagag   120
aatcaacaag gaactggcca acatccgctc caagttcaaa ggagacaaag ccttggatgg   180
ctacagtaag aaaaaatatg gttacctgtt catttctgtg ctggtgaact cgaactcgga   240
gctgatccgc ctcatcaaca cgccatcaa gaatgacctg ccagccgca accccacctt   300
catgtgcctg ccctgcact gcatcgccaa cgtgggcagc cgggagatgg gcgaggcctt   360
tgccgctgac atcccccgca tcctggtggc cggggacagc atggacagtg tcaagcagag   420
tgcggccctg tgcctccttc gactgtacaa ggcctcgcct gacctggtgc ccatgggcga   480
gtggacggcg cgtgtggtac acctgctcaa tgaccagcac atgggtgtgg tcacggccgc   540
cgtcagcctc atcacctgtc tctgcaagaa gaacccagat gacttcaaga cgtgcgtctc   600
tctggctgtg tcgcgcctga ccggatcgt ctcctctgcc tccaccgacc tccaggacta   660
cacctactac ttcgtcccag caccctggct ctcggtgaag ctcctgcggc tgctgcagtg   720
ctacccgcct ccagaggatg cggctgtgaa ggggcggctg gtggaatgtc tggagactgt   780
gctcaacaag gcccaggagc cccccaaatc caagaaggtg cagcattcca cgccaagaa   840
cgccatcctc ttcgagacca tcagcctcat catccactat gacagtgagc ccaacctcct   900
ggttcgggcc tgcaaccagc tgggccagtt cctgcagcac cgggagacca acctgcgcta   960
cctggccctg gagagcatgt gcacgctggc cagctccgag ttctcccatg aagccgtcaa   1020
gacgcacatt gacaccgtca tcaatgccct caagacggag cgggacgtca gcgtgcggca   1080
gcgggcggct gacctcctct acgccatgtg tgaccggagc aatgccaagc agatcgtgtc   1140
ggagatgctg cggtacctgg agacggcaga ctacgccatc cgcgaggaga tcgtcctgaa   1200
ggtggccatc ctggccgaga gtacgccgt ggactacagc tggtacgtgg acaccatcct   1260
caacctcatc cgcattgcgg cgactacgt gagtgaggag gtgtggtacc gtgtgctaca   1320
gatcgtcacc aaccgtgatg acgtccaggg ctatgccgcc aagaccgtct ttgaggcgct   1380
ccaggcccct gcctgtcacg agaacatggt gaaggttggc ggctacatcc ttggggagtt   1440
tgggaacctg attgctgggg accccgctc cagcgtggcc acgcgggcgc tgctgctgtc   1500
cacctacatc aagttcatca acctcttccc cgagaccaag gccaccatcc agggcgtcct   1560
gcgggccggc tcccagctgc gcaatgctga cgtggagctg cagcagcgag ccgtggagta   1620
cctcaccctc agctcagtgg ccagcaccga cgtcctggcc acggtgctgg aggagatgcc   1680
gcccttcccc gagcgcgagt cgtccatcct ggccaagctg aaacgcaaga aggggccagg   1740
ggccggcagc gccctggacg atggccggag ggaccccagc agcaacgaca tcaacggggg   1800
catggagccc accccagca ctgtgtcgac gccctcgccc tccgccgacc tcctggggct   1860
gcgggcagcc cctcccccgg cagcacccc ggcttctgca ggagcaggga accttctggt   1920
ggacgtcttc gatggcccgg ccgcccagcc cagcctgggg cccacccccg aggaggcctt   1980
cctcagccca ggtcctgagg acatcggccc tcccattccg gaagccgatg agttgctgaa   2040
taagtttgtg tgtaagaaca acggggtcct gttcgagaac cagctgctgc agatcggagt   2100
caagtcagag ttccgacaga acctgggccg catgtatctc ttctatggca acaagacctc   2160
ggtgcagttc cagaatttct cacccactgt ggttcacccg ggagacctcc agactcatat   2220
cctctcaggc ccggcccagc tcctgcctc tccacgtcgg ccttcctcac cgtggggaag   2280
ccggctgacc cagctggctg tgcagaccaa gcgcgtggcg cgcaggtgg acggcggcgc   2340

```
gcaggtgcag caggtgctca atatcgagtg cctgcgggac ttcctgacgc ccccgctgct    2400
gtccgtgcgc ttccggtacg gtggcgcccc ccaggccctc accctgaagc tcccagtgac    2460
catcaacaag ttcttccagc ccaccgagat ggcggcccag gatttcttcc agcgctggaa    2520
gcagctgagc ctccctcaac aggaggcgca gaaaatcttc aaagccaacc accccatgga    2580
cgcagaagtt actaaggcca agcttctggg gtttggctct gctctcctgg acaatgtgga    2640
ccccaaccct gagaacttcg tggggggcgg gatcatccag actaaagccc tgcaggtggg    2700
ctgtctgctt cggctggagc ccaatgccca ggcccagatg taccggctga ccctgcgcac    2760
cagcaaggag cccgtctccc gtcacctgtg tgagctgctg gcacagcagt tctga         2815


<210> 51
<211> 937
<212> PRT
<213> Homo Sapien


<400> 51
Pro Gly Ala Asp Thr Thr Ala Ile Met Pro Ala Val Ser Lys Gly Asp
 1               5                  10                  15
Gly Met Arg Gly Leu Ala Val Phe Ile Ser Asp Ile Arg Asn Cys Lys
            20                  25                  30
Ser Lys Glu Ala Glu Ile Lys Arg Ile Asn Lys Glu Leu Ala Asn Ile
        35                  40                  45
Arg Ser Lys Phe Lys Gly Asp Lys Ala Leu Asp Gly Tyr Ser Lys Lys
    50                  55                  60
Lys Tyr Gly Tyr Leu Phe Ile Ser Val Leu Val Asn Ser Asn Ser Glu
65                  70                  75                  80
Leu Ile Arg Leu Ile Asn Asn Ala Ile Lys Asn Asp Leu Ala Ser Arg
                85                  90                  95
Asn Pro Thr Phe Met Cys Leu Ala Leu His Cys Ile Ala Asn Val Gly
            100                 105                 110
Ser Arg Glu Met Gly Glu Ala Phe Ala Ala Asp Ile Pro Arg Ile Leu
        115                 120                 125
Val Ala Gly Asp Ser Met Asp Ser Val Lys Gln Ser Ala Ala Leu Cys
    130                 135                 140
Leu Leu Arg Leu Tyr Lys Ala Ser Pro Asp Leu Val Pro Met Gly Glu
145                 150                 155                 160
Trp Thr Ala Arg Val Val His Leu Leu Asn Asp Gln His Met Gly Val
                165                 170                 175
Val Thr Ala Ala Val Ser Leu Ile Thr Cys Leu Cys Lys Lys Asn Pro
            180                 185                 190
Asp Asp Phe Lys Thr Cys Val Ser Leu Ala Val Ser Arg Leu Ser Arg
        195                 200                 205
Ile Val Ser Ser Ala Ser Thr Asp Leu Gln Asp Tyr Thr Tyr Tyr Phe
    210                 215                 220
Val Pro Ala Pro Trp Leu Ser Val Lys Leu Leu Arg Leu Leu Gln Cys
225                 230                 235                 240
Tyr Pro Pro Pro Glu Asp Ala Ala Val Lys Gly Arg Leu Val Glu Cys
                245                 250                 255
Leu Glu Thr Val Leu Asn Lys Ala Gln Glu Pro Pro Lys Ser Lys Lys
            260                 265                 270
Val Gln His Ser Asn Ala Lys Asn Ala Ile Leu Phe Glu Thr Ile Ser
        275                 280                 285
Leu Ile Ile His Tyr Asp Ser Glu Pro Asn Leu Leu Val Arg Ala Cys
    290                 295                 300
Asn Gln Leu Gly Gln Phe Leu Gln His Arg Glu Thr Asn Leu Arg Tyr
305                 310                 315                 320
```

- 53 -

```
Leu Ala Leu Glu Ser Met Cys Thr Leu Ala Ser Ser Glu Phe Ser His
              325           330              335
Glu Ala Val Lys Thr His Ile Asp Thr Val Ile Asn Ala Leu Lys Thr
              340           345              350
Glu Arg Asp Val Ser Val Arg Gln Arg Ala Ala Asp Leu Leu Tyr Ala
              355           360              365
Met Cys Asp Arg Ser Asn Ala Lys Gln Ile Val Ser Glu Met Leu Arg
              370           375              380
Tyr Leu Glu Thr Ala Asp Tyr Ala Ile Arg Glu Glu Ile Val Leu Lys
385           390              395              400
Val Ala Ile Leu Ala Glu Lys Tyr Ala Val Asp Tyr Ser Trp Tyr Val
              405           410              415
Asp Thr Ile Leu Asn Leu Ile Arg Ile Ala Gly Asp Tyr Val Ser Glu
              420           425              430
Glu Val Trp Tyr Arg Val Leu Gln Ile Val Thr Asn Arg Asp Asp Val
              435           440              445
Gln Gly Tyr Ala Ala Lys Thr Val Phe Glu Ala Leu Gln Ala Pro Ala
    450           455              460
Cys His Glu Asn Met Val Lys Val Gly Gly Tyr Ile Leu Gly Glu Phe
465           470              475              480
Gly Asn Leu Ile Ala Gly Asp Pro Arg Ser Ser Val Ala Thr Arg Ala
              485           490              495
Leu Leu Leu Ser Thr Tyr Ile Lys Phe Ile Asn Leu Phe Pro Glu Thr
              500           505              510
Lys Ala Thr Ile Gln Gly Val Leu Arg Ala Gly Ser Gln Leu Arg Asn
              515           520              525
Ala Asp Val Glu Leu Gln Gln Arg Ala Val Glu Tyr Leu Thr Leu Ser
    530           535              540
Ser Val Ala Ser Thr Asp Val Leu Ala Thr Val Leu Glu Glu Met Pro
545           550              555              560
Pro Phe Pro Glu Arg Glu Ser Ser Ile Leu Ala Lys Leu Lys Arg Lys
              565           570              575
Lys Gly Pro Gly Ala Gly Ser Ala Leu Asp Asp Gly Arg Arg Asp Pro
              580           585              590
Ser Ser Asn Asp Ile Asn Gly Gly Met Glu Pro Thr Pro Ser Thr Val
              595           600              605
Ser Thr Pro Ser Pro Ser Ala Asp Leu Leu Gly Leu Arg Ala Ala Pro
610           615              620
Pro Pro Ala Ala Pro Pro Ala Ser Ala Gly Ala Gly Asn Leu Leu Val
625           630              635              640
Asp Val Phe Asp Gly Pro Ala Ala Gln Pro Ser Leu Gly Pro Thr Pro
              645           650              655
Glu Glu Ala Phe Leu Ser Pro Gly Pro Glu Asp Ile Gly Pro Pro Ile
              660           665              670
Pro Glu Ala Asp Glu Leu Leu Asn Lys Phe Val Cys Lys Asn Asn Gly
              675           680              685
Val Leu Phe Glu Asn Gln Leu Leu Gln Ile Gly Val Lys Ser Glu Phe
    690           695              700
Arg Gln Asn Leu Gly Arg Met Tyr Leu Phe Tyr Gly Asn Lys Thr Ser
705           710              715              720
Val Gln Phe Gln Asn Phe Ser Pro Thr Val Val His Pro Gly Asp Leu
              725           730              735
Gln Thr His Ile Leu Ser Gly Pro Ala Gln Pro Pro Ala Ser Pro Arg
              740           745              750
Arg Pro Ser Ser Pro Trp Gly Ser Arg Leu Thr Gln Leu Ala Val Gln
```

```
           755                    760                        765
Thr Lys Arg Val Ala Ala Gln Val Asp Gly Gly Ala Gln Val Gln Gln
   770                    775                    780
Val Leu Asn Ile Glu Cys Leu Arg Asp Phe Leu Thr Pro Pro Leu Leu
785                    790                        795
Ser Val Arg Phe Arg Tyr Gly Gly Ala Pro Gln Ala Leu Thr Leu Lys
                   805                    810                    815
Leu Pro Val Thr Ile Asn Lys Phe Phe Gln Pro Thr Glu Met Ala Ala
                   820                    825                    830
Gln Asp Phe Phe Gln Arg Trp Lys Gln Leu Ser Leu Pro Gln Gln Glu
                   835                    840                    845
Ala Gln Lys Ile Phe Lys Ala Asn His Pro Met Asp Ala Glu Val Thr
   850                    855                    860
Lys Ala Lys Leu Leu Gly Phe Gly Ser Ala Leu Leu Asp Asn Val Asp
865                    870                    875                    880
Pro Asn Pro Glu Asn Phe Val Gly Ala Gly Ile Ile Gln Thr Lys Ala
                   885                    890                    895
Leu Gln Val Gly Cys Leu Leu Arg Leu Glu Pro Asn Ala Gln Ala Gln
                   900                    905                    910
Met Tyr Arg Leu Thr Leu Arg Thr Ser Lys Glu Pro Val Ser Arg His
                   915                    920                    925
Leu Cys Glu Leu Leu Ala Gln Gln Phe
   930                    935
```

<210> 52
<211> 3313
<212> DNA
<213> Homo sapiens

<400> 52

```
tcacatcccc ttgaccctcc aatcacctcg ggctcccatt tgattggaag gcggcaaagg     60
ctttaatctc ccccttggtg cagctgcttt tgaagtgagt ttcctcgcca gagccccggc    120
tggacacgca gcggctcgca tcgcagagcg cagcgccggc gcggggccgc gagaacgcag    180
cgcaggggag cagcccgagg cggacaccgc gagccgcccg gcactcccgc agtccagccg    240
gctcctctag cccggccacg gctccgctgc gggccaccca ggattactcg cgtctggctc    300
caggcgccga gaaggcgcgc tgggcgcccg tggccgccgc gccagctcct cctcctcccg    360
ctgctcctgc tcccggggcg agcgcgcagc cccgagcccg ccccgcgcct cccggagccc    420
tccccccccgc tgctcccatg cgcgcggggtg ggtcatgagc acagcgccct cgctttctgc    480
cctaagaagc agtaagcaca gcggcggcgg cggcggcgga ggcggaggcg gcggtgcaga    540
ccctgcctgg accagcgcgc tctctggaaa tagctccggc cccggcccag gctcgtcccc    600
ggccggcagc accaagcctt ttgtgcacgc cgtgcccccc tctgacccccc tgcgccaggc    660
caaccgcctg ccaatcaagg tgctgaagat gctgacggca cgaactggcc acattttgca    720
ccccgagtac ctgcagcccc tgccttccac gccggtcagc cccatcgagc tcgatgccaa    780
gaagagcccg ctggcgctgt tggcgcaaac atgttcgcag atcgggaagc ccgacccctc    840
gccctcctcc aaactctcct cggttgcctc caacgggggc ggcgcgggcg gtgccggcgg    900
cggtgctgcg ggcgacaagg acaccaaatc gggcccccctg aagctgagcg acatcggcgt    960
ggaggacaag tcgagtttca agccgtactc caaacccggc tcggataaga aggagccggg   1020
aggcggcggt ggaggcggtg gcggtggcgg gggcggcggc gggggtgttt cgtcggagaa   1080
gtcgggattc cgggtaccga gcgccacctg ccagccattc acgcccagga caggcagccc   1140
gagctccagc gcctcggcct gctcgccggg aggtatgctg tcctcggccg ggggtgcccc   1200
ggagggcaag gacgacaaga aagacaccga cgtgggcggc ggtggcaagg caccggggggg   1260
cgcctcggcc gaagggggac ccacggggct ggcacacggc cggattagct gcggcggcgg   1320
gattaatgtg gatgtgaacc agcatccgga tggggggccg ggaggcaagg ctctgggctc   1380
ggactgcggc ggttcatcgg gctccagctc cggctccggc cccagcgcgc ccacctcctc   1440
ctcagtgttg ggctctgggc tggtggctcc cgtgtcaccc tacaagccgg gccagacagt   1500
```
```

                                - 55 -
```

```
gttccctctg cctcccgcgg gtatgaccta cccaggcagc ctggccgggg cctacgccgg   1560
ctacccgccc cagttcctgc cacacggcgt ggcacttgac cccaccaagc cgggcagcct   1620
ggtggggggcg cagctggcgg cggccgcggc cgggtctctg ggctgcagta agccggccgg   1680
ctccagccct ttggccggag cgtctccgcc gtccgtgatg acagccagtt tgtgccggga   1740
cccttactgc ctcagctacc actgcgctag ccacctggca ggggcggcgg ccgccagcgc   1800
ttcttgcgca catgatccgg ctgctgcggc tgcggcgctg aagtccggat acccgctggt   1860
gtaccccacg cacccgctgc acggtgtgca ctcctcgcta acggccgccg cggctgctgg   1920
cgccacaccg ccctccctgg ccggccaccc cctctacccc tacggcttta tgctccctaa   1980
cgacccactc ccccacatct gcaactgggt gtcggccaac gggccgtgcg acaagcgctt   2040
cgccacgtcc gaagagctgc tgagccactt gcggacccat acggcatttc ccgggacaga   2100
caaactgctg tcgggctacc ccagctcgtc gtctctggcc agcgctgccg cggccgccat   2160
ggcttgccac atgcacatcc ccacctcggg cgcaccgggc agccctggga cgctggcgct   2220
gcgcagcccc caccacgcgc tgggactcag cagccgctac cacccctact ccaagagccc   2280
gcttcccacg cctggcgccc ccgtgccggt gcccgccgcc accggaccgt actactcccc   2340
ctacgccctc tacggacaga gactgaccac cgcctcggcg ctggggtatc agtgagggcg   2400
gccgggaggg cgagcgaggg agaggaggga gaggggagg ggaggagtcc agggagaggc   2460
gggatcacgg cccaggctgc tgacacccgc gcgtggggag gactcgggcc acgaaaggaa   2520
agaaatgtat accgtatcta tctacccgac agcagcgacc gagacccggt gggacactcc   2580
ccttctcccc actttcacct ccccacccaa actttataaa agttgaaaaa atatcatttg   2640
acttttata gaaaaaaaaa ggaaaaaata attgagaaag tgttcatctg aggactgcat   2700
cggtggacac tggtatttat ttatgttagc tccaagcgga ccggtggttc aaaagtgcat   2760
tatttagttt gagctctgta ggtaaaaagg aggtgggaaa aattttaaaa cttgagggta   2820
aaaatgtgga aaacaaaccc tcccatccct tgtagattat aaataaaagc aaaaccgcca   2880
cagaactaga ggtcttctct ttaatgttac tttaaaattg ctatgattgt attgtacgtt   2940
atttaatgtc tgattgaaac acaaatttac atgcatgttt gttacaaaaa aaatgaaaaa   3000
aaaagtcaca atttgtcagc tctgatttca aattgcaatt attttttaagg tgtataccat   3060
cgaagagaat gggtattttt ttgtatgtat tctggaagaa aacaacaaaa aaaaaagaaa   3120
aagaaaaaat tctattccaa aacctcattt gccttatttt gttctttaaa aggaacactt   3180
aactattttt aattttttaag tccacccgct gagaaggga caaggtttac gtcatgtact   3240
aaaataatag acaatgtatc gctttaaaga ttaaaattcc gtatatttga tgtattaaag   3300
ggttttactt ctt                                                      3313
```

<210> 53
<211> 646
<212> PRT
<213> Homo sapiens

<400> 53
```
Met Ser Thr Ala Pro Ser Leu Ser Ala Leu Arg Ser Ser Lys His Ser
 1               5                  10                  15
Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Ala Asp Pro Ala Trp
            20                  25                  30
Thr Ser Ala Leu Ser Gly Asn Ser Ser Gly Pro Gly Pro Gly Ser Ser
        35                  40                  45
Pro Ala Gly Ser Thr Lys Pro Phe Val His Ala Val Pro Pro Ser Asp
    50                  55                  60
Pro Leu Arg Gln Ala Asn Arg Leu Pro Ile Lys Val Leu Lys Met Leu
65                  70                  75                  80
Thr Ala Arg Thr Gly His Ile Leu His Pro Glu Tyr Leu Gln Pro Leu
                85                  90                  95
Pro Ser Thr Pro Val Ser Pro Ile Glu Leu Asp Ala Lys Lys Ser Pro
            100                 105                 110
Leu Ala Leu Leu Ala Gln Thr Cys Ser Gln Ile Gly Lys Pro Asp Pro
        115                 120                 125
Ser Pro Ser Ser Lys Leu Ser Ser Val Ala Ser Asn Gly Gly Gly Ala
```

```
                130                     135                     140
Gly Gly Ala Gly Gly Gly Ala Ala Gly Asp Lys Asp Thr Lys Ser Gly
145                     150                     155                     160
Pro Leu Lys Leu Ser Asp Ile Gly Val Glu Asp Lys Ser Ser Phe Lys
                        165                     170                     175
Pro Tyr Ser Lys Pro Gly Ser Asp Lys Lys Glu Pro Gly Gly Gly Gly
                180                     185                     190
Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Val Ser Ser Glu
            195                     200                     205
Lys Ser Gly Phe Arg Val Pro Ser Ala Thr Cys Gln Pro Phe Thr Pro
    210                     215                     220
Arg Thr Gly Ser Pro Ser Ser Ser Ala Ser Ala Cys Ser Pro Gly Gly
225                     230                     235                     240
Met Leu Ser Ser Ala Gly Gly Ala Pro Glu Gly Lys Asp Asp Lys Lys
                    245                     250                     255
Asp Thr Asp Val Gly Gly Gly Gly Lys Gly Thr Gly Gly Ala Ser Ala
                260                     265                     270
Glu Gly Gly Pro Thr Gly Leu Ala His Gly Arg Ile Ser Cys Gly Gly
            275                     280                     285
Gly Ile Asn Val Asp Val Asn Gln His Pro Asp Gly Gly Pro Gly Gly
        290                     295                     300
Lys Ala Leu Gly Ser Asp Cys Gly Gly Ser Ser Gly Ser Ser Ser Gly
305                     310                     315                     320
Ser Gly Pro Ser Ala Pro Thr Ser Ser Ser Val Leu Gly Ser Gly Leu
                325                     330                     335
Val Ala Pro Val Ser Pro Tyr Lys Pro Gly Gln Thr Val Phe Pro Leu
                340                     345                     350
Pro Pro Ala Gly Met Thr Tyr Pro Gly Ser Leu Ala Gly Ala Tyr Ala
            355                     360                     365
Gly Tyr Pro Pro Gln Phe Leu Pro His Gly Val Ala Leu Asp Pro Thr
        370                     375                     380
Lys Pro Gly Ser Leu Val Gly Ala Gln Leu Ala Ala Ala Ala Ala Gly
385                     390                     395                     400
Ser Leu Gly Cys Ser Lys Pro Ala Gly Ser Ser Pro Leu Ala Gly Ala
                405                     410                     415
Ser Pro Pro Ser Val Met Thr Ala Ser Leu Cys Arg Asp Pro Tyr Cys
            420                     425                     430
Leu Ser Tyr His Cys Ala Ser His Leu Ala Gly Ala Ala Ala Ala Ser
        435                     440                     445
Ala Ser Cys Ala His Asp Pro Ala Ala Ala Ala Ala Leu Lys Ser
    450                     455                     460
Gly Tyr Pro Leu Val Tyr Pro Thr His Pro Leu His Gly Val His Ser
465                     470                     475                     480
Ser Leu Thr Ala Ala Ala Ala Ala Gly Ala Thr Pro Pro Ser Leu Ala
                485                     490                     495
Gly His Pro Leu Tyr Pro Tyr Gly Phe Met Leu Pro Asn Asp Pro Leu
            500                     505                     510
Pro His Ile Cys Asn Trp Val Ser Ala Asn Gly Pro Cys Asp Lys Arg
        515                     520                     525
Phe Ala Thr Ser Glu Glu Leu Leu Ser His Leu Arg Thr His Thr Ala
    530                     535                     540
Phe Pro Gly Thr Asp Lys Leu Leu Ser Gly Tyr Pro Ser Ser Ser Ser
545                     550                     555                     560
Leu Ala Ser Ala Ala Ala Ala Ala Met Ala Cys His Met His Ile Pro
                565                     570                     575
```

```
Thr Ser Gly Ala Pro Gly Ser Pro Gly Thr Leu Ala Leu Arg Ser Pro
            580                 585                 590
His His Ala Leu Gly Leu Ser Ser Arg Tyr His Pro Tyr Ser Lys Ser
            595                 600                 605
Pro Leu Pro Thr Pro Gly Ala Pro Val Pro Val Pro Ala Ala Thr Gly
            610                 615                 620
Pro Tyr Tyr Ser Pro Tyr Ala Leu Tyr Gly Gln Arg Leu Thr Thr Ala
625                 630                 635                 640
Ser Ala Leu Gly Tyr Gln
                    645
```